SEPTEMBER and OCTOBER, 1899.

STOCK LIST

SCULLY STEEL & IRON COMPANY

RECEIVED PAYMENT.

OFFICE AND WAREHOUSES:
130 TO 150 FULTON STREET
AND
67 TO 87 WAYMAN STREET,
CHICAGO, ILL.

LONG DISTANCE TELEPHONES. EXPRESS 150-171-172.

CABLE ADDRESS "SCULIRON" USE LIEBERS, DIRECTORY AND A. I. CODES.

ILLINOIS STEEL CO.

CHICAGO, ILL.

MANUFACTURERS

BOILER, TANK,

SHIP AND BRIDGE PLATE

AND

SHEET STEEL.

LARGEST ROLLS IN THE WORLD.

ROLLS 132, 90 and 60 inches long.

· BRANDS ·

BEST FIRE	BOX STEEL,	50,000	to	60,000	Tensile	Strength
MARINE	"	50,000	"	60,000	"	
FLANGE	"	55,000	"	60,000	"	
SHELL	"	60,000	"	65,000	"	

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ILLINOIS STEEL CO.'S

FLANGE STEEL—60,000 T. S.

IN STOCK.

Sizes shown as not on hand are being made and are daily expected from mill.

No.	Size.	No.	Size.	No.	Size.
5	1-4 x 24 x 120	20	1-4 x 72 x 120	2	5-16 x 49 x 80
24	" x 26 x 120	10	" x 72 x 138	40	" x 49 x 90
14	" x 26 x 138	5	" x 72 x 143	26	" x 49 x 99
10	" x 30 x 120	10	" x 72 x 156	10	" x 49 x 118
10	" x 30 x 138	5	" x 84½ x 98	3	" x 49 x 138
32	" x 32 x 120	5	" x 84½ x 118	5	" x 49 x 143
5	" x 32 x 138	38	" x 84½ x 138	5	" x 49 x 156
100	" x 36 x 98	5	" x 84½ x 143	5	" x 49 x 175
50	" x 36 x 120	14	" x 84½ x 156	5	" x 49 x 194
10	" x 36 x 138	2	" x 96 x 98	20	" x 50 x 120
25	" x 36 x 156	2	" x 96 x 118	5	" x 50 x 138
5	" x 38 x 120	3	" x 96 x 138	5	" x 50 x 176
5	" x 38 x 138	5	" x 96 x 143	46	" x 54 x 99
20	" x 40 x 120	2	" x 96 x 156	14	" x 54 x 120
10	" x 40 x 138	14	5-16 x 26 x 80	5	" x 54 x 138
5	" x 42 x 120	48	" x 26 x 99	5	" x 54 x 176
8	" x 42 x 138	24	" x 26 x 120	32	" x 57 x 80
10	" x 44 x 98	2	" x 26 x 138	44	" x 57 x 90
8	" x 44 x 120	18	" x 30 x 80	8	" x 57 x 99
8	" x 44 x 138	5	" x 30 x 99	26	" x 57 x 118
50	" x 48 x 120	12	" x 30 x 120	10	" x 57 x 138
10	" x 48 x 156	6	" x 30 x 138	8	" x 57 x 143
25	" x 49 x 98	2	" x 32 x 80	14	" x 57 x 156
42	" x 49 x 118	36	" x 32 x 99	5	" x 57 x 175
10	" x 49 x 138	50	" x 32 x 120	5	" x 57 x 194
14	" x 49 x 143	46	" x 32 x 138	50	" x 60 x 120
25	" x 49 x 156	2	" x 36 x 80	10	" x 60 x 138
10	" x 54 x 98	44	" x 36 x 90	10	" x 60 x 144
12	" x 54 x 120	2	" x 36 x 99	25	" x 64¼ x 90
14	" x 54 x 138	20	" x 36 x 120	26	" x 64¼ x 99
5	" x 54 x 156	2	" x 36 x 138	5	" x 64¼ x 118
10	" x 57 x 98	5	" x 38 x 80	5	" x 64¼ x 138
12	" x 57 x 118	5	" x 38 x 90	7	" x 64¼ x 143
38	" x 57 x 138	4	" x 38 x 99	25	" x 64¼ x 156
5	" x 57 x 143	2	" x 38 x 120	25	" x 64¼ x 175
5	" x 57 x 156	2	" x 38 x 138	25	" x 64¼ x 194
42	" x 60 x 98	28	" x 40 x 80	20	" x 72½ x 99
25	" x 60 x 120	10	" x 40 x 90	10	" x 72½ x 118
18	" x 60 x 138	8	" x 40 x 99	10	" x 72½ x 120
33	" x 60 x 144	5	" x 40 x 120	10	" x 72½ x 138
25	" x 60 x 156	5	" x 40 x 138	10	" x 72½ x 143
10	" x 64¼ x 98	5	" x 42 x 120	10	" x 72½ x 156
10	" x 64¼ x 118	5	" x 42 x 138	34	" x 72½ x 175
5	" x 64¼ x 138	5	" x 44 x 99	28	" x 72½ x 194
5	" x 64¼ x 143	5	" x 44 x 120	10	" x 72½ x 232½
16	" x 64¼ x 156	5	" x 44 x 138	5	" x 84½ x 118
25	" x 72 x 98	25	" x 48 x 120	5	" x 84½ x 138

See pages 4 & 5 for Flange Steel Heads and Dome Plate Allowances.
See pages 72 and 73 for sizes of boilers above plates will make.

ILLINOIS STEEL CO.'S

FLANGE STEEL—60,000 T. S.

IN STOCK.

Sizes shown as not on hand are being made and are daily expected from mill.

No.	Size.	No.	Size.
5	5-16 x 84½ x 143	18	3-8 x 72½ x 118
12	" x 84½ x 156	24	" x 72½ x 138
38	" x 84½ x 175	36	" x 72½ x 156
40	" x 84½ x 194	8	" x 72½ x 175
5	" x 95½ x 99	14	" x 72½ x 194
5	" x 95½ x 118	40	" x 72½ x 212½
5	" x 95½ x 138	60	" x 72½ x 232½
5	" x 95½ x 143	5	" x 84½ x 120
62	" x 95½ x 156	....	" x 84½ x 138
40	" x 95½ x 175	....	" x 84½ x 156
60	" x 95½ x 194	2	" x 84½ x 194
5	" x107½ x 194	2	" x 84½ x 212½
2	3-8 x 24 x 120	2	" x 84½ x 232½
50	" x 30 x 120	....	" x 95½ x 120
2	" x 36 x 99½	3	" x 95½ x 156
10	" x 36 x 120	22	" x 95½ x 194
2	" x 36 x 138	32	" x 95½ x 212½
48	" x 39 x 99½	50	" x 95½ x 232½
2	" x 40 x 120	2	" x 96 x 118
2	" x 40 x 138	24	" x107½ x 194
32	" x 42 x 120	10	" x107½ x 212½
2	" x 42 x 138	6	" x107½ x 232½
10	" x 44 x 99	6	7-16 x 36 x 120
36	" x 44 x 120	2	" x 48 x 120
2	" x 44 x 138	4	" x 60 x 120
92	" x 48 x 120	6	" x 72 x 120
20	" x 48 x 138	8	1-2 x 24 x 120
40	" x 49 x 99	14	" x 30 x 120
14	" x 49 x 118	20	" x 36 x 120
44	" x 50 x 120	22	" x 48 x 120
20	" x 50 x 138	30	" x 60 x 120
22	" x 54 x 120	6	" x 72 x 120
24	" x 54 x 138	....	" x 84 x 138
26	" x 57 x 118	20	5-8 x 36 x 120
2	" x 57 x 138	4	" x 48 x 120
60	" x 60 x 120	28	" x 60 x 120
2	" x 60 x 138	12	" x 72 x 120
4	" x 64¼ x 108	8	3-4 x 36 x 120
30	" x 64¼ x 118	2	" x 44 x 120
4	" x 64¼ x 138	2	" x 48 x 120
4	" x 64¼ x 156	1	" x 60 x 120
58	" x 64¼ x 194		
62	" x 64¼ x 212½		
42	" x 64¼ x 232½		
50	" x 72½ x 99		
24	" x 72½ x 108		

ODD SIZES.

No.	Size.
....	5-16 x 11 x 189
....	" x 12 x 54
....	" x 15 x 189
....	" x 66 x 72
2	" x 83 x 192
1	" x 83 x 194
2	" x 94 x 117
1	3-8 x 9 x 72
4	" x 26 x 99
1	" x 36 x 68
1	" x 40 x 54
....	" x 44 x 118
1	" x 50 x 132
....	" x 61 x 108
1	" x 68½ x 107½
1	7-16 x 45 x 54
1	" x 99½ x 139½
2	11-16 x 96½ x 180
1	Hd. 7-16 flanged to 38 in. dia.
....	

MARINE STEEL

2	1-2 x 100 x 126½
2	5-8 x 8 x 120
4	Hds. 7-8 x 40 dia.

FLANGE FIRE BOX STEEL.

	3-8 x 40 x 54
	7-16 x 45 x 54
	Hd. 7-16 flanged to 38 in. dia.
....	.....

FLANGE IRON.

2	3-8 x 40⅞ x 74

NOTICE.

When so desired, we can furnish

IRON BOILER PLATE

for any purpose.

See pages 4 and 5 for Flange Steel Hds. and Dome Plate allowances.
See pages 72 and 73 for sizes of boilers above plates will make.

ILLINOIS STEEL CO. S

FLANGE STEEL HEADS.—60,000 T. S.

IN STOCK.

Diameter of Heads.	Thickness of Heads.					
	1-4	5-16	3-8	7-16	1-2	5-8
14 in.	.....	10	16	.....	.....	.....
16 "	.....	25	80	.....	.....	.....
18 "	.....	14	320	.....	.....	.....
20 "	.....	152	112	.....	.....	.....
22 "	.....	72	92	.....	.....	.....
24 "	.....	170	150	.....	.....	.....
26 "	.....	72	42	.....	.....	.....
28 "	.....	124	300	.....	.....	.....
30 "	.....	10	120	52	54	.....
32 "	.....	40	38	.....	.....	.....
34 "	.....	68	228	44	120	.....
36 "	.....	10	76	20	80	.....
38 "	.....	8	48	.....	.....	.....
40 "	.....	140	100	42	4	.....
42 "	.....	4	18	10	18	.....
44 "	.....	38	28	24	10	.....
46 "	.....	46	66	10	20	.....
48 "	.....	26	122	22	12	.....
52½ "	.....	.....	52	100	24	.....
54 "	.....	.....	.....	.....	3	.....
58½ "	.....	24	62	70	34	.....
60 "	.....	.....	.....	.....	2	.....
65 "	.....	14	98	38	84	.....
71 "	.....	8	.....	18	10	16
77 "	.....	10	28	2	70	38
78 "	.....	.....	10	.....	10	.....
81 "	.....	.....	.....	.....	4	.....
89 "	.....	.....	12	.....	6	.....
101 "	.....	34	14	.....	2	.....
102 "	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....

Sizes shown as not on hand are being made and are daily expected from mill.

See opposite page for heads already flanged.
See pages 2 and 3 for Flange Steel Plates.

MACHINE FLANGED HEADS.

ILLINOIS STEEL CO.'S

FLANGE STEEL.—60,000 T. S.

IN STOCK.

Sizes shown as not on hand are being made and are daily expected from mill.

Outside Dia. of Heads after being Flanged.	Thickness of Heads.			
	5-16	3-8	7-16	1-2
12 in.	.....	.....	.....	.....
16 "	36	.....	.....	.....
17 "	.....	1	.....	.....
18 "	2	23	.....	.....
20 "	50	8	.....	.....
22 "	6	32	.....	.....
23½ "	.....	.....	.....	.....
24 "	62	122	.....	.....
26 "	24	66	.....	.....
28 "	.....	12	.....	.....
29½ "	.....	.....	.....	.....
30 "	74	136	24	2
32 "	.....	.....	.....	.....
35¼ "	.....	.....	.....	.....
35½ "	14	38	.....	.....
36 "	54	146	20	.....
40 "	.....	4	.....	.....
41⅝ "	.....	.....	12	12
41½ "	8	28	4	.....
42 "	20	66	40	10
43⅝ "	.....	14	4	6
43½ "	.....	8	.....	.....
44 "	.....	44	2	12
47 "	.....	.....	.....	.....
47⅝ "	.....	18	.....	14
47½ "	.....	22	.....	20
48 "	20	54	14	50
53⅝ "	.....	14	10	.....
54 "	.....	.....	10	48
56 "	.....	.....	.....	1
59¼ "	.....	.....	.....	.....
59⅝ "	.....	.....	12	.....
60 "	.....	30	28	28
60¼ "	.....	.....	.....	24
65 "	.....	.....	10	.....
65¼ "	.....	.....	.....	.....
66 "	.....	.....	16	38
70 "	.....	.....	.....	5
71 "	.....	.....	.....	10
71¼ "	.....	.....	.....	4
71½ "	.....	.....	.....	8
72 "	.....	.....	.....	20

FLANGED HEADS with MAN HOLES

Flanged in them 3 inches from rim.

Outside Dia. of Heads after being Flanged, with thickness.	MAN HOLE. No. 1.	MAN HOLE. No. 2.
48 in. x $\frac{7}{16}$ in.	.....	1
48 " x $\frac{1}{2}$ "	5	1
54 " x $\frac{7}{16}$ "	.....	.....
54 " x $\frac{1}{2}$ "	.....	1
60 " x $\frac{7}{16}$ "	.....	.....
60 " x $\frac{1}{2}$ "	.....	3
66 " x $\frac{7}{16}$ "	.....	.....
66 " x $\frac{1}{2}$ "	.....	1
72 " x $\frac{1}{2}$ "	.....	.....

3 No. 5 Eclipse Man Heads complete with saddles for 72 in. boiler.

DISHED HEADS.

Outside Dia. of Heads after being Flanged, with thickness.	NUMBER IN STOCK.
72 in. x $\frac{5}{16}$ in. With Ideal Man Hole near rim.	1
30 in. x $\frac{5}{8}$ in. With No. 2 Eclipse Man Hole in center.	1
71 in. x $\frac{1}{2}$ in. With No. 5 Eclipse Man Hole in center.	.....

Heads up to 48 inch diameter have 2 inch flange.
Heads 48 and 54 inch diameter have 2¼ inch flange.
Heads 60, 66 and 72 inch diameter have 2½ inch flange.
See page 54 for price list Flanging, Dishing, Drilling and Punching.
See pages 2 and 3 for Flange Steel Plates.

TANK STEEL.

IN STOCK.

Sizes shown as not on hand are being made and are daily expected from mill.

No.	Size.	No.	Size.	No.	Size.
...	**No. 8** x 26 x 120	215	**3-16** x 42 x 120	282	**1-4** x 36 x 120
260	" x 30 x 96	108	" x 42 x 138	10	" x 36 x 138
340	" x 30 x 120	12	" x 44 x 98	146	" x 36 x 144
628	" x 36 x 96	10	" x 44 x 120	40	" x 36 x 156
700	" x 36 x 120	5	" x 44 x 138	60	" x 38 x 120
216	" x 40 x 96	5	" x 44 x 144	5	" x 38 x 138
108	" x 40 x 120	40	" x 44 x 156	74	" x 40 x 98
150	" x 42 x 96	26	" x 46 x 120	56	" x 40 x 120
176	" x 42 x 120	140	" x 48 x 98	60	" x 40 x 138
5	" x 44 x 144	100	" x 48 x 120	10	" x 40 x 144
566	" x 48 x 96	180	" x 48 x 138	20	" x 40 x 156
246	" x 48 x 120	52	" x 48 x 144	40	" x 42 x 120
260	" x 48 x 138	162	" x 48 x 156	68	" x 42 x 138
58	" x 48 x 144	64	" x 48 x 175	86	" x 44 x 98
168	" x 48 x 156	48	" x 48 x 194	12	" x 44 x 120
360	" x 54 x 96	10	" x 49 x 98	5	" x 44 x 138
330	" x 54 x 120	80	" x 49 x 118	118	" x 44 x 144
124	" x 60 x 96	468	" x 54 x 98	60	" x 44 x 156
256	" x 60 x 120	260	" x 54 x 120	210	" x 48 x 98
156	" x 60 x 138	226	" x 54 x 138	262	" x 48 x 120
100	" x 60 x 144	104	" x 54 x 144	162	" x 48 x 138
166	" x 60 x 156	110	" x 54 x 156	112	" x 48 x 144
32	**3-16** x 24 x 120	214	" x 60 x 98	90	" x 48 x 156
5	" x 24 x 138	400	" x 60 x 120	64	" x 48 x 175
10	" x 26 x 120	112	" x 60 x 138	58	" x 48 x 194
10	" x 26 x 138	38	" x 60 x 144	10	" x 49 x 98
66	" x 28 x 120	146	" x 60 x 156	10	" x 49 x 118
26	" x 28 x 138	10	" x 60 x 175	40	" x 49 x 156
250	" x 30 x 98	180	" x 60 x 194	24	" x 50 x 120
14	" x 30 x 120	346	" x 72 x 98	8	" x 50 x 138
48	" x 30 x 138	480	" x 72 x 120	52	" x 54 x 98
5	" x 32 x 120	292	" x 72 x 138	38	" x 54 x 120
5	" x 32 x 138	100	" x 72 x 144	16	" x 54 x 138
4	" x 34 x 120	360	" x 72 x 156	22	" x 54 x 144
14	" x 34 x 138	152	" x 72 x 175	72	" x 54 x 156
407	" x 36 x 98	128	" x 72 x 194	404	" x 60 x 98
294	" x 36 x 120	96	**1-4** x 24 x 120	90	" x 60 x 120
120	" x 36 x 138	70	" x 24 x 138	82	" x 60 x 138
78	" x 36 x 144	48	" x 26 x 120	180	" x 60 x 144
134	" x 36 x 156	98	" x 26 x 138	116	" x 60 x 156
5	" x 38 x 120	5	" x 28 x 120	78	" x 60 x 175
5	" x 38 x 138	204	" x 30 x 98	70	" x 60 x 194
25	" x 40 x 98	284	" x 30 x 120	228	" x 72 x 98
58	" x 40 x 120	100	" x 30 x 138	268	" x 72 x 120
14	" x 40 x 138	5	" x 32 x 120	156	" x 72 x 138
24	" x 40 x 144	5	" x 32 x 138	170	" x 72 x 144
38	" x 42 x 96	18	" x 36 x 98	184	" x 72 x 156

See page 8 for Tank Steel Heads and Segments.
See page 73 for sizes of Rendering Tanks carried in stock.

TANK STEEL.

IN STOCK.

No.	Size.	No.	Size.	No.	Size.
120	1-4 x 72 x 175	12	5-16 x 72 x 175	20	1-2 x 65 x 118
96	" x 72 x 194	20	" x 72 x 194	18	" x 72½ x 118
92	" x 84½ x 98	4	" x 84½ x 118	12	" x 72½ x 232½
174	" x 84½ x 120	5	" x 84½ x 138	22	" x 84 x 120
84	" x 84½ x 138	24	" x 84½ x 156	16	" x 96 x 232½
68	" x 84½ x 144	2	" x 84½ x 194		
118	" x 84½ x 156	2	" x 95½ x 118		
46	" x 84½ x 175	22	" x 95½ x 138		
90	" x 84½ x 194	4	" x 95½ x 156		
42	" x 96 x 98	4	" x 95½ x 194		
34	" x 96 x 118	48	3-8 x 24 x 120		
8	" x 96 x 138	46	" x 30 x 120		
14	" x 96 x 144	10	" x 36 x 120		
6	" x 96 x 156	5	" x 36 x 138		
10	" x 96 x 175	50	" x 40 x 120		
10	" x 96 x 194	12	" x 40 x 138		
24	5-16 x 24 x 120	46	" x 42 x 120		
2	" x 24 x 138	10	" x 42 x 138		
5	" x 26 x 120	56	" x 44 x 120		
58	" x 30 x 120	10	" x 44 x 138		
10	" x 36 x 120	72	" x 48 x 120		
5	" x 36 x 138	54	" x 48 x 138		
5	" x 40 x 120	14	" x 49 x 118		
5	" x 42 x 120	12	" x 54 x 120		
5	" x 42 x 138	12	" x 54 x 138		
18	" x 44 x 120	.....	" x 57 x 118		
12	" x 44 x 138	76	" x 60 x 120		
60	" x 48 x 120	10	" x 60 x 138		
56	" x 48 x 138	14	" x 60 x 156		
106	" x 48 x 144	48	" x 60 x 194		
34	" x 48 x 156	10	" x 72½ x 118		
80	" x 48 x 175	24	" x 72½ x 138		
30	" x 48 x 194	16	" x 72½ x 156		
14	" x 49 x 118	6	" x 72½ x 194		
10	" x 54 x 120	14	" x 72½ x 212½		
44	" x 54 x 138	10	" x 72½ x 232½		
5	" x 57 x 156	32	" x 84½ x 120		
5	" x 57 x 175	5	" x 95½ x 156		
32	" x 60 x 120	5	" x 95½ x 194		
40	" x 60 x 138	8	" x 95½ x 212½		
38	" x 60 x 144	14	" x 95½ x 232½		
58	" x 60 x 156	36	1-2 x 24 x 120		
24	" x 60 x 175	34	" x 30 x 120		
18	" x 60 x 194	52	" x 36 x 120		
5	" x 64¼ x 118	18	" x 40 x 120		
5	" x 64¼ x 156	70	" x 48 x 120		
6	" x 72 x 120	22	" x 57 x 118		
14	" x 72 x 138	44	" x 60 x 120		
34	" x 72 x 156	24	" x 60 x 138		

Sizes shown as not on hand are being made and are daily expected from mill.

ODD SIZES.

No.	Size.
1	No. 8 x 18 x 54
2	" x 27½ x 55
6	" x 27 x 60
1	" x 30 x 60
1	" x 31 x 120
12	" x 44 x 120
12	" x 49 x 58
16	1-4 x 12 x 60
10	" x 18 x 36
3	" x 25¼ x 48
1	" x 28 x 59
1	" x 38¾ x 74
1	" x 60 x 128
2	" x 62 x 155
1	" x 72 x 164
1	" x 88 x 175
1	5-16 x 8½ x 105½
3	" x 10¾ x 72½
1	" x 18 x 72
1	" x 24 x 24¾
1	" x 24 x 90½
1	" x 27½ x 72½
1	3-8 x 29 x 54
1	" x 30 x 30¾
2	" x 30 x 42
1	" x 45¼ x 49¼
3	" x 48 x 151
2	" x 51 x 157
9	" x 62 x 155½
1	1-2 x 40 x 40¼
1	" x 60 x 69½
4	Hds. No. 18x42 in
9	Hds. No. 13x36 in
15	Hds. No. 12x24 in
....	.....
....	.....
....	.....
....	.....

See page 8 for Tank Steel Heads.
See page 73 for sizes of Rendering Tanks carried in stock.

TANK STEEL HEADS.

IN STOCK.

Diameter of Heads.	Thickness of Heads.							
	No. 10	No. 8	3-16	1-4	5-16	3-8	7-16	1-2
22 in.	.....	.....	.....	.....	.....	.....	.....	.....
24 "	58	.....	116	72	26	.....	.....	.....
26 "	.....	.....	.....	2	5	.....	.....	.....
28 "	98	.....	300	34	10	18	.....	.....
30 "	.....	.....	150	88	48	50	.....	.....
32 "	.....	.....	.....	.....	.....	.....	.....	.....
34 "	204	.....	428	76	22	70	12	2
36 "	.....	.....	.....	.....	.....	.....	.....	4
40 "	100	.....	300	54	110	36	16	.....
42 "	.....	.....	.....	.....	.....	.....	.....	.....
44 "	.....	.....	.....	.....	.....	.....	.....	.....
46 "	18	.....	80	8	72	20	18	.....
48 "	.....	.....	56	40	18	36	12	.....
52½ "	44	.....	160	2	50	60	10	8
58½ "	.....	.....	52	24	22	48	54	.....
60 "	.....	.....	.....	.....	.....	.....	.....	.....
65 "	.....	.....	72	26	20	10	.....	.....
71 "	.....	.....	.....	.....	2	.....	12	18
72 "	.....	.....	.....	.....	.....	4	.....	.....
76 "	.....	.....	.....	.....	.....	.....	.....	.....
77 "	.....	.....	.....	18	2	2	34	.....
81 "	.....	.....	.....	.....	.....	.....	.....	2
89 "	.....	.....	.....	2	20	4	.....	.....
101 "	.....	.....	.....	10	4	6	.....	.....
103 "	.....	.....	.....	.....	.....	.....	.....	.....

Sizes shown as not on hand are being made and are daily expected from mill.

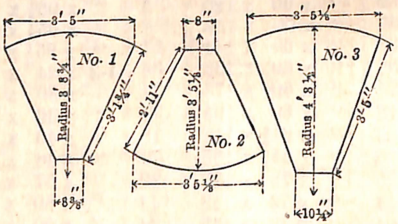
TANK STEEL SEGMENTS.

For Rendering Tanks 6 feet diameter.—6 Segments for each Head.

IN STOCK.

No. Sgmts.	Size.
3	No. 1 x 3-8
24	" 2 x 3-8
.....	" 3 x 3-8
8	" 1 x 1-2
.....	" 2 x 1-2
10	" 3 x 1-2

MEASUREMENTS OF RENDERING TANK SEGMENTS.



See page 73 for sizes of Rendering Tanks carried in stock.
See pages 6 and 7 for Tank Steel Plates.

MACHINE FLANGED HEADS.
TANK STEEL.
IN STOCK.

Outside dia. of Heads after being flanged.	Thickness of Heads					
	3-16	1-4	5-16	3-8	7-16	1-2
20 in.	66	.....	.....	.....	.....	.....
22 "	.....	.....	.....	.....	.....	.....
24 "	64	32	.....	.....	.....	.....
26 "	.....	.....	.....	.....	.....	.....
28 "	.....	.....	.....	.....	.....	.....
30 "	44	28	.....	34	.....	.....
32 "	.....	.....	.....	.....	.....	.....
34 "	.....	.....	.....	.....	.....	.....
36 "	26	20	46	.....	.....	.....
38 "	.....	.....	.....	.....	.....	.....
40 "	.....	.....	.....	.....	.....	.....
42 "	24	30	6	.....	.....	.....
44 "	.....	.....	.....	.....	.....	.....
48 "	.....	4	.....	.....	8	2
54 "	.....	.....	.....	.....	.....	.....
60 "	10	4	4	.....	6	16
66 "	.....	.....	.....	.....	.....	.....
72 "	.....	.....	.....	.....	.....	
84 "	.....	.....	6	.....	.....	.....

DISHED HEADS.

Outside Dia. of Heads after being Flanged, with thickness.	No. in Stock.
56 dia. x $\frac{1}{4}$	1
26 " x $\frac{5}{16}$	1

Heads up to 48 in. diameter have 2 in. flange.

Heads 48 in. and 54 in. diameter have 2½ in. flange.

Heads 60, 66 and 72 in. diameter have 2½ in. flange.

Sizes shown as not on hand are being made and are daily expected from mill.

TABLE OF DISHING SIZES.

Showing extreme depths we can dish heads in Chicago.

Diameter of Flanged Heads.	Depths can Dish.	Diameter of Flanged Heads.	Depths can Dish.	Diameter of Flanged Heads.	Depths can Dish.
30	3	60	6	84	9
36	3	66	7	90	10
42	4	71	7	96	12
48	5	72	8	.....	.....
54	6	80	8	.....	.....

DOME PLATE ALLOWANCES.

Diameter of Domes.	Diameter of Shells.								
	30	36	42	48	54	60	66	72	84
20	6¼	5½	5¼	.....	.....	.....	.....	.....	.....
22	7¼	6¼	5¾	5¼	.....	.....	.....	.....	.....
24	8½	7¼	6½	5¾	5½	.....	.....	.....	.....
26	.....	8¼	7¼	6½	6	.....	.....	.....	.....
28	.....	9½	8	7¼	6½	6	.....	.....	.....
30	.....	10¾	9	8	7¼	6¾	6¼	5¾	5¼
32	.....	.....	10	8¾	8	7¼	6¾	6¼	5¾
34	.....	.....	.....	9¾	8¾	8	7¼	7	6
36	.....	.....	.....	10¾	9½	8½	8	7¼	6½
38	.....	.....	.....	.....	10¼	9½	8¾	8	7
40	.....	.....	.....	.....	.....	10¼	9½	9¾	7½
42	.....	.....	.....	.....	.....	11¼	10¼	10½	8
44	.....	.....	.....	.....	.....	.....	11	10	9
46	.....	.....	.....	.....	.....	.....	12¼	10¾	9½
48	.....	.....	.....	.....	.....	.....	13	11½	10

SOFT SHEET STEEL.

IN STOCK.

Sizes shown as not on hand are being made and are daily expected from mill.

No. Shts.	Size.	No. Shts.	Size.	No. Shts.	Size.
202	**No. 10** x 24 x 96	168	**No. 12** x 24 x 108	680	**No. 14** x 36 x 96
28	" x 24 x 108	10	" x 24 x 120	1176	" x 36 x 108
216	" x 24 x 120	246	" x 26 x 96	1404	" x 36 x 120
750	" x 26 x 96	90	" x 26 x 108	10	" x 40 x 77
310	" x 26 x 108	5	" x 26 x 120	162	" x 40 x 84
280	" x 26 x 120	22	" x 28 x 96	706	" x 40 x 96
260	" x 28 x 96	244	" x 28 x 108	1140	" x 40 x 120
26	" x 28 x 108	148	" x 28 x 120	278	" x 42 x 96
108	" x 28 x 120	1582	" x 30 x 96	502	" x 42 x 120
1950	" x 30 x 96	346	" x 30 x 108	242	" x 48 x 78
1002	" x 30 x 108	320	" x 30 x 120	298	" x 48 x 84
484	" x 30 x 120	2234	" x 36 x 96	1786	" x 48 x 96
820	" x 36 x 96	802	" x 36 x 108	466	" x 48 x 108
1278	" x 36 x 108	2140	" x 36 x 120	1440	" x 48 x 120
2970	" x 36 x 120	284	" x 40 x 78	156	" x 48 x 127
260	" x 40 x 96	114	" x 40 x 84	918	" x 48 x 138
208	" x 40 x 120	1124	" x 40 x 96	124	" x 48 x 144
876	" x 42 x 96	1292	" x 40 x 120	1780	**No 16** x 24 x 96
....	" x 42 x 108	880	" x 42 x 96	310	" x 24 x 108
660	" x 42 x 120	400	" x 42 x 120	972	" x 24 x 120
250	" x 48 x 78	772	" x 48 x 78	882	" x 26 x 96
1410	" x 48 x 96	1340	" x 48 x 84	350	" x 26 x 108
1032	" x 48 x 108	1236	" x 48 x 96	924	" x 26 x 120
2480	" x 48 x 120	740	" x 48 x 108	354	" x 28 x 96
640	" x 48 x 138	3800	" x 48 x 120	208	" x 28 x 108
426	" x 48 x 144	100	" x 48 x 127	346	" x 28 x 120
300	" x 54 x 96	904	" x 48 x 138	1314	" x 30 x 96
....	" x 54 x 108	850	" x 48 x 144	330	" x 30 x 108
404	" x 54 x 120	102	" x 54 x 96	488	" x 30 x 120
5	" x 60 x 78	118	" x 54 x 120	5	" x 36 x 77
400	" x 60 x 96	96	" x 60 x 96	1364	" x 36 x 96
16	" x 60 x 108	341	" x 60 x 120	676	" x 36 x 108
166	" x 60 x 120	704	**No. 14** x 24 x 96	520	" x 36 x 120
20	" x 60 x 138	350	" x 24 x 108	380	" x 40 x 96
25	" x 60 x 144	320	" x 24 x 120	390	" x 40 x 120
52	" x 66 x 78	6	" x 26 x 96	156	" x 42 x 96
112	" x 66 x 96	202	" x 26 x 108	124	" x 42 x 120
44	" x 66 x 120	96	" x 26 x 120	380	" x 48 x 78
5	" x 66 x 138	266	" x 28 x 96	794	" x 48 x 96
10	" x 72 x 78	15	" x 28 x 108	544	" x 48 x 108
154	" x 72 x 96	244	" x 28 x 120	1290	" x 48 x 120
276	" x 72 x 120	284	" x 30 x 96	486	" x 48 x 138
174	" x 72 x 138	160	" x 30 x 108	988	" x 48 x 144
42	" x 72 x 144	1108	" x 30 x 120	1760	**No. 18** x 24 x 96
262	**No. 12** x 24 x 96	968	" x 36 x 77	416	" x 24 x 108

We can have Sheet Steel galvanized in one day here in Chicago.
All Sheet Steel is now rolled according to United States Standard Gauge, shown on page 75.

SOFT SHEET STEEL.

IN STOCK.

No. Shts.	Size.
514	**No. 18** x 24 x 120
1010	" x 26 x 96
662	" x 26 x 108
406	" x 26 x 120
878	" x 28 x 96
652	" x 28 x 108
10	" x 28 x 120
874	" x 30 x 96
484	" x 30 x 108
1166	" x 30 x 120
780	" x 36 x 96
1060	" x 36 x 120
5	" x 40 x 96
5	" x 40 x 120
6	" x 48 x 96
No. Bdls	
216	**No. 20** x 24 x 96
....	" x 24 x 120
40	" x 26 x 96
46	" x 28 x 96
458	" x 30 x 96
209	" x 30 x 120
506	" x 36 x 96
219	" x 36 x 120
170	**No. 22** x 24 x 96
....	" x 24 x 120
28	" x 26 x 96
164	" x 28 x 96
....	" x 28 x 101

No. Bdls	Size.
706	**No. 22** x 30 x 96
112	" x 30 x 120
206	" x 36 x 96
40	" x 36 x 120
160	**No. 24** x 24 x 96
38	" x 24 x 101
100	" x 26 x 96
180	" x 28 x 96
500	" x 30 x 96
156	" x 30 x 120
4	" x 36 x 96
166	" x 36 x 120
134	**No. 26** x 24 x 96
10	" x 24 x 101
20	" x 26 x 96
240	" x 28 x 96
220	" x 30 x 96
42	" x 30 x 120
100	**No. 27** x 24 x 101
286	" x 30 x 96
292	" x 30 x 101

NOTICE.

We are prepared to furnish

SHEET IRON

when so desired.

ODD SIZES.

No.	Size.
3	**No. 10** x 49 x 58
4	" x 60 x 131
1	" x 72 x 126
3	" x 72 x 132
2	" x 72 x 139
17	**No. 12** x 30 x 50½
3	**No. 14** x 24 x 71
7	" x 24 x 78
5	" x 24 x 117
95	" x 40 x 138
6	**No. 16** x 14 x 82⅛
2	" x 24 x 71
1	" x 26 x 84
....	.....
....	.....
....	.....
....	.....
....	.....
....	.....
....	.....
....	.....
....	.....
....	.....
....	.....
....	.....
....	.....

Sizes shown as not on hand are being made and are daily expected from mill.

We can have Sheet Steel galvanized in one day here in Chicago.
All Sheet Steel is now rolled according to United States Standard Gauge, shown on page 75.

STAYBOLT IRON.

IN STOCK.

No. Bars.	Size.	No. Bars.	Size.
231	⅜ Round.	192	1 Round.
117	⅞ "	90	1⅛ "
...	15/16 "	402	1¼ "

See page 40 for list prices of Cut Staybolts.
See page 40 for list prices of Staybolt Taps.

GALVANIZED SHEET STEEL.

IN STOCK.

No. Sheets.	Size.	No. B'dl's.	Size.	No. B'dl's.	Size.
26	No. 14 x 28 x 96	42	No. 20 x 24 x 96	62	No. 26 x 30 x 96
150	" x 30 x 96	33	" x 26 x 96	32	" x 36 x 96
125	" x 30 x120	61	" x 28 x 96	55	No. 27 x 24 x 96
152	" x 36 x 96	29	" x 28 x101	64	" x 26 x 96
153	" x 36 x120	81	" x 30 x 96	76	" x 28 x 96
B'dl's.		40	" x 30 x120	80	" x 30 x 96
45	No. 16 x 24 x 96	40	" x 36 x 96	43	" x 36 x 96
25	" x 26 x 96	15	" x 36 x120	25	" x 36 x120
45	" x 28 x 96	25	No. 22 x 24 x 96	61	No. 28 x 24 x 96
38	" x 30 x 96	34	" x 26 x 96	67	" x 26 x 96
5	" x 30 x120	51	" x 28 x 96	69	" x 28 x 96
37	" x 36 x 96	64	" x 30 x 96	63	" x 30 x 96
40	" x 36 x120	51	" x 36 x 96	80	" x 36 x 96
42	No. 18 x 24 x 96	55	No. 24 x 24 x 96	3	No. 29 x 24 x 96
25	" x 26 x 96	71	" x 26 x 96	13	" x 26 x 96
46	" x 28 x 96	58	" x 28 x 96	15	" x 28 x 96
25	" x 28 x101	57	" x 30 x 96	24	" x 30 x 96
48	" x 30 x 96	45	" x 36 x 96	.....	No. 30 x 24 x 96
26	" x 30 x120	95	No. 25 x 30 x 96	1	" x 26 x 96
48	" x 36 x 96	45	No. 26 x 24 x 96	26	" x 28 x 96
40	" x 36 x120	46	" x 26 x 96	11	" x 30 x 96
4	" x 48 x 96	69	" x 28 x 96	.....	.....
3	" x 48 x120	25	" x 28 x120	.....	.....

Sizes shown as not on hand are being made and are daily expected from mill.

PRICE LIST.

Gauge.	Weight Per Sq. Ft.	Price Per Lb.
No. 10	92½ oz.	12 cts.
" 11	82½ "	12 "
" 12	72½ "	12 "
" 13	62½ "	12 "
" 14	52½ "	12 "
" 15	47½ "	12 "
" 16	42½ "	12 "
" 17	38½ "	13 "
" 18	34½ "	13 "
" 19	30½ "	13 "
" 20	26½ "	13 "
" 21	24½ "	13 "
" 22	22½ "	14 "
" 23	20½ "	14 "
" 24	18½ "	14 "
" 25	16½ "	15 "
" 26	14½ "	15 "
" 27	13½ "	16 "
" 28	12½ "	17 "
" 29	11½ "	19 "
" 30	10½ "	21 "

EXTRA PRICES FOR EXTRA WIDTHS.

No. 18 and heavier.	Per Lb.
Over 36 in. to 40 in., inclusive	1 cent.
" 40 " 44 " "	1½ cts.
" 44 " 48 " "	2½ "

No. 19 and lighter.	
Less than 24 in. wide	1 cent.
Over 32 in. to 36 in., inclusive	1 "
" 36 " 40 " "	2 cts.
" 40 " 44 " "	3 "
" 44 " 48 " "	5 "
Longer than 120 inches	1 cent.
Less than 60 inches	½ "

One-half cent per lb. additional for pattern sheets, i. e., for all bundles in which every sheet is required to be of exact length specified or where all are required to be of the same length. But sheets of any length, in bundles, in which one or two sheets of the same number and width, but shorter than the full length ordered, are allowed to be put up in each bundle, will be considered ordinary length, and will not be subject to any extra charge for length.

Above prices for Extra Widths and Pattern Lengths are to be added to list price, then discounted regularly.

Special sizes of Galvanized Sheet Steel furnished promptly from mill.

SHEET AND TANK RIVETS.
IN STOCK.

Length of Rivets.	CONE HEAD. Dia. of Rivets.			FLAT HEAD. Dia. of Rivets.			ROUND HEAD. Dia. of Rivets.		
	1-4	3-8	7-16	1-4	5-16	3-8	1-4	5-16	3-8
⅜	....	....	....	38	....	....	....	....	....
½	....	25	....	69	45	25	...	10	5
⅝	.	35	....	40	55	40	....	30	5
¾	....	40	4	35	20	50	....	20	20
⅞	....	65	20	35	25	43	....	5	10
1	5	25	15	3	7	15	....	20	5
1⅛	4	24	3	4	7	17	....	5	5
1¼	...	9	5	9	3	9	....	5	5
1⅜	4	40	3	6	....	5	....	....	5
1½	1	40	5	2	7	8	....	5	5
1⅝	....	....	4	....	....	....	....	....	5
1¾	2	15	6	....	5	5	....	....	5
1⅞	....	22	....	....	....	....	....	....	....
2	....	30	....	....	....	....	....	....	....

POUND RIVETS. Size.	No. Kegs in stock.
4 lb.	.....
6 "	17
8 "	15
10 "	15
12 "	15
14 "	5

See page 93 for complete price list of Sheet and Tank Rivets.

See page 92 for table showing number Sheet and Tank Rivets in 100 lbs.

Sizes shown as not on hand are being made and are daily expected from mill.

BLUE ANNEALED SHEET IRON.
IN STOCK.

No. Shts.	Size.	No. Shts.	Size.	No. Shts.	Size
80	No. 10 x 24 x 120	2	No. 16 x 24 x 96	10	No.18 x 24 x 96
42	" x 26 x 96	59	" x 26 x 108	15	" x 28 x 96
28	" x 30 x 96	1	" x 28 x 96	9	" x 28 x108
22	" x 30 x 108	....	....	.....	... .
5	" x 32 x 96	.....	.....	.....	.....
1	" x 38 x 96	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....

Special sizes of Sheet Iron furnished promptly from mill.

GALVANIZED STEEL.
TABLE SHOWING NUMBER OF GALVANIZED SHEETS GENERALLY PLACED IN BUNDLES.

Thickness of Sheets.	Width of Sheets in Inches.				
	24	26	28	30	36
No. 18	5	4	4	4	Loose
" 20	6	5	5	5	4
" 22	7	7	6	6	5
" 24	10	9	8	8	6
" 25	10	9	8	8	.....
" 26	11	10	9	9	7
" 27	11	10	9	9	8
" 28	12	11	10	9	.....

CONE HEAD

STERNBERGH BOILER RIVETS.

IN STOCK.

No. Kegs.	Size.	No. Kegs.	Size.	No. Kegs.	Size.	No. Kegs.	Size.
94	1-2 x 3/4	14	5-8 x 4	110	3-4 x 1 1/8	120	7-8 x 1 1/8
36	" x 7/8	24	" x 4 1/4	126	" x 1 1/4	410	" x 2
76	" x 1	46	" x 4 1/2	184	" x 1 3/8	132	" x 2 1/8
120	" x 1 1/8	26	" x 4 3/4	470	" x 1 1/2	256	" x 2 1/4
122	" x 1 1/4	20	" x 5	268	" x 1 5/8	118	" x 2 3/8
128	" x 1 3/8	32	" x 5 1/4	360	" x 1 3/4	430	" x 2 1/2
160	" x 1 1/2	16	" x 5 1/2	406	" x 1 7/8	192	" x 2 5/8
110	" x 1 5/8	14	" x 5 3/4	620	" x 2	182	" x 2 3/4
120	" x 1 3/4	10	" x 6	236	" x 2 1/8	76	" x 2 7/8
30	" x 1 7/8	6	" x 6 1/4	580	" x 2 1/4	62	" x 3
62	" x 2	10	" x 6 1/2	220	" x 2 3/8	108	" x 3 1/4
100	" x 2 1/4	18	11-16 x 1 1/2	740	" x 2 1/2	32	" x 3 1/2
66	" x 2 1/2	48	" x 1 1/4	252	" x 2 5/8	....	" x 3 3/4
....	" x 2 3/4	76	" x 1 3/8	302	" x 2 3/4	48	" x 4
36	" x 3	100	" x 1 1/2	80	" x 2 7/8	....	" x 4 1/4
24	" x 3 1/4	34	" x 1 5/8	64	" x 3	6	" x 4 1/2
18	" x 3 1/2	68	" x 1 3/4	74	" x 3 1/4	18	" x 5
26	" x 4	120	" x 1 7/8	96	" x 3 1/2	8	" x 5 1/2
....	5-8 x 3/4	88	" x 2	8	" x 3 3/4	8	" x 6
...	" x 7/8	20	" x 2 1/8	144	" x 4	6	" x 6 1/2
134	" x 1	88	" x 2 1/4	34	" x 4 1/4	....	" x 7
286	" x 1 1/8	50	" x 2 3/8	100	" x 4 1/2	....	" x 8
364	" x 1 1/4	60	" x 2 1/2	....	" x 4 3/4	22	1 x 2
298	" x 1 3/8	70	" x 2 3/4	46	" x 5	28	" x 2 1/4
748	" x 1 1/2	22	" x 3	36	" x 5 1/4	46	" x 2 1/2
432	" x 1 5/8	5	" x 3 1/4	96	" x 5 1/2	26	" x 2 3/4
340	" x 1 3/4	52	" x 3 1/2	50	" x 5 3/4	24	" x 3
406	" x 1 7/8	6	" x 3 3/4	60	" x 6	26	" x 3 1/4
770	" x 2	12	" x 4	5	" x 6 1/4	14	" x 3 1/2
110	" x 2 1/8	16	" x 4 1/4	22	" x 6 1/2	32	" x 3 3/4
162	" x 2 1/4	12	" x 4 1/2	14	" x 7	20	" x 4
400	" x 2 1/2	5	" x 4 3/4	....	" x 7 1/2	10	" x 4 1/2
190	" x 2 3/4	48	" x 5	....	" x 8	20	" x 4 1/2
32	" x 2 7/8	5	" x 5 1/4	10	7-8 x 1 1/2	32	" x 5
90	" x 3	20	" x 5 1/2	10	" x 1 1/4	14	" x 5 1/2
46	" x 3 1/4	8	" x 5 3/4	20	" x 1 1/8	20	" x 6
64	" x 3 1/2	8	" x 6	32	" x 1 1/2	10	" x 6 1/2
5	" x 3 3/4	20	" x 6 1/2	50	" x 1 5/8	.....	.....
34	" x 3 7/8	....	3-4 x 1	166	" x 1 3/4	.....	.....

Sizes shown as not on hand are being made and are daily expected from mill.

ROUND HEAD RIVETS.

202	Kegs,	15-16	x 2 1/4	long.
44	"	"	x 2 3/8	"
42	"	"	x 3	"
2	"	"	x 3 1/8	"

The length of a rivet is the distance under the head.

See page 92 for table showing number of Rivets in 100 lbs.

BUTTON HEAD
STEEL STRUCTURAL RIVETS.
IN STOCK.

Sizes shown as not on hand are being made and are daily expected from mill.

No. Kegs	Size.	No. Kegs.	Size.	No. Kegs.	Size.
.....	1-2 x 3/4	.....	3-4 x 1 5/8	.....	7-8 x 3 5/8
.....	" x 7/8	.....	" x 1 3/4	.....	" x 3 3/4
.....	" x 1	.....	" x 1 7/8	.....	" x 3 7/8
.....	" x 1 1/8	.....	" x 2	.....	" x 4
.....	" x 1 1/4	.....	" x 2 1/8	.....	" x 4 1/8
.....	" x 1 3/8	.....	" x 2 1/4	.....	" x 4 1/4
.....	" x 1 1/2	.....	" x 2 1/3	.....	" x 4 3/8
.....	" x 1 5/8	.....	" x 2 3/4	.....	" x 4 1/8
.....	" x 1 3/4	.....	" x 2 7/8	.....	" x 4 5/8
.....	" x 1 7/8	.....	" x 3	.....	" x 4 3/4
.....	" x 2	.....	" x 3 1/8	.....	" x 4 7/8
.....	" x 2 1/8	.....	" x 3 1/4	.....	" x 5
.....	" x 2 1/4	.....	" x 3 3/8	.....	" x 5 1/8
.....	" x 2 3/8	.....	" x 3 1/2	.....	" x 5 1/4
.....	" x 2 1/2	.....	" x 3 5/8	.....	" x 5 3/8
.....	" x 2 5/8	.....	" x 3 3/4	.....	" x 5 1/2
.....	" x 2 3/4	.....	" x 3 7/8	.....	" x 5 5/8
.....	" x 2 7/8	.....	" x 4	.....	" x 5 3/4
.....	" x 3	.....	" x 4 1/8	.....	" x 6
.....	5-8 x 1	.....	" x 4 1/4	.....	" x 6 1/4
.....	" x 1 1/8	.....	" x 4 3/8	.....	1 x 1 7/8
.....	" x 1 1/4	.....	" x 4 1/2	.....	" x 2 3/4
.....	" x 1 3/8	.....	" x 4 5/8	.....	" x 4 1/2
.....	" x 1 1/2	.....	" x 4 3/4	.....	.....
.....	" x 1 5/8	.....	" x 4 7/8	.....	.....
.....	" x 1 3/4	.....	" x 5	.....	.....
.....	" x 1 7/8	.....	" x 5 1/2	.....	.....
.....	" x 2	.....	7-8 x 1 1/4	.....	.....
.....	" x 2 1/8	.....	" x 1 1/2	.....	.....
.....	" x 2 1/4	.....	" x 1 5/8	.....	.....
.....	" x 2 3/8	.....	" x 1 3/4	.....	.....
.....	" x 2 1/2	.....	" x 1 7/8	.....	.....
.....	" x 2 5/8	.....	" x 2	.....	.....
.....	" x 2 3/4	.....	" x 2 1/8	.....	.....
.....	" x 2 7/8	.....	" x 2 1/4	.....	.....
.....	" x 3	.....	" x 2 3/8	.....	.....
.....	" x 3 1/8	.....	" x 2 1/2	.....	.....
.....	" x 3 1/4	.....	" x 2 5/8	.....	.....
.....	" x 3 3/8	.....	" x 2 3/4	.....	.....
.....	" x 3 1/2	.....	" x 2 7/8	.....	.....
.....	" x 3 5/8	.....	" x 3	.....	.....
.....	3-4 x 1	.....	" x 3 1/8	.....	.....
.....	" x 1 1/4	.....	" x 3 1/4	.....	.....
.....	" x 1 3/8	.....	" x 3 3/8	.....	.....
.....	" x 1 1/2	.....	" x 3 1/2	.....	.....

The length of a rivet is the distance under the head.
See page 92 for table showing number of rivets in 100 lbs.

SOFT STEEL
LAP-WELDED BOILER TUBES.
IN STOCK.

Sizes shown as not on hand are being made and are daily expected from mill.

No.	Size.	No.	Size.	No.	Size.
169	1¼ x 10 ft.	376	2½ x 4 ft.	946	4 x 15 ft.
507	" x 12 "	1350	" x 5 "	6706	" x 16 "
7	" x 16 "	1328	" x 5 ft. 6 in.	....	" x 17 "
11	1½ x 5 "	1081	" x 6 "	3735	" x 18 "
8	" x 6 "	1061	" x 6 " 6 in.	274	" x 20 "
11	" x 8 "	787	" x 7 "	62	4½ x 16 "
657	" x 10 "	1005	" x 7 " 6 in.	202	" x 18 "
802	" x 12 "	432	" x 8 "	....	" x 20 "
1	" x 18 "	1040	" x 10 "	53	5 x 16 "
207	1¾ x 2 "	1526	" x 12 "	....	" x 18 "
34	" x 2 " 11 in.	1168	" x 14 "	....	" x 20 "
479	" x 3 " 6 in.	2	" x 15 "	....	6 x 16 "
216	" x 5 "	100	" x 16 "	300	" x 18 "
1991	" x 6 "	251	" x 18 "	89	" x 20 "
462	" x 8 "	...	" x 20 "	103	" x 22 "
747	" x 10 "	....	2¾ x 10 "	48	" x 24 "
3213	" x 12 "	....	" x 12 "	9	8 x 18 "
40	" x 15 "	385	" x 14 "		
707	" x 16 "	13	" x 16 "		
....	" x 18 "	131	3 x 4 "		
697	2 x 2 "	246	" x 5 "		
1026	" x 2 " 6 in.	750	" x 6 "		
2135	" x 3 "	161	" x 6 " 6 in.		
2089	" x 3 " 6 in	383	" x 7 "		
3107	" x 4 "	1737	" x 7 " 6 in.		
1585	" x 4 " 6 in.	71	" x 8 "		
2443	" x 5 "	150	" x 9 "		
2589	" x 5 " 6 in.	1950	" x 10 "		
4539	" x 6 "	132	" x 10 " 6 in.		
1682	" x 6 " 6 in.	270	" x 11 "		
2471	" x 7 "	866	" x 11 " 6 in.		
999	" x 7 " 6 in.	1274	" x 12 "		
2588	" x 8 "	3406	" x 14 "		
709	" x 9 "	953	" x 15 "		
2662	" x 10 "	150	" x 16 "		
898	" x 11 "	100	" x 18 "		
3509	" x 12 "	....	3¼ x 12 "		
147	" x 13 "	14	" x 14 "		
1274	" x 14 "	....	" x 16 "		
274	" x 15 "	10	3½ x 4 "		
211	" x 16 "	651	" x 10 "		
133	" x 18 "	1901	" x 12 "		
1230	2¼ x 10 "	2441	" x 14 "		
520	" x 12 "	3602	" x 16 "		
579	" x 14 "	18	" x 18 "		
363	" x 16 "	258	4 x 12 "		
....	2½ x 1 " 11 in.	107	" x 13 "		
610	" x 3 "	1414	" x 14 "		

SEAMLESS BRASS TUBES

Number Tubes in Stock.	Size.	Thickness Stubs' Gauge.	Weight per ft. (in lbs.)
10	2 x 6 ft.	13	2.099
10	" x 8 "	13	2.099
10	" x 10 "	13	2.099
10	" x 12 "	13	2.099

The ends of Brass Tubes in stock are annealed.

SEAMLESS COPPER TUBES

Number Tubes in Stock.	Size.	Thickness Stubs' Gauge.	Weight per ft. (in lbs.)
10	2 x 12 ft.	12	2.55
10	" x 12 "	14	1.97
10	" x 12 "	16	1.56

The ends of Copper Tubes in stock are not annealed.

TYLER KNOBBLED CHARCOAL IRON
LAP-WELDED BOILER TUBES.
IN STOCK.

No.	Size.	No.	Size.	No.	Size.
2	1¼ x 11 ft. 6 in.	3	2 x 7 ft. 6 in.	217	2½ x 16 ft.
1	" x 12 "	11	" x 8 "	...	3 x 8 "
335	1½ x 6 "	11	" x 9 "	....	" x 9 "
3	2 x 2 "	1	" x 9 ft. 6 in.	86	" x 10 "
3	" x 2 ft. 6 in.	15	" x 10 "	25	" x 12 "
3	" x 3 "	73	" x 11 "	169	3½ x 14 "
2	" x 3 ft. 6 in.	500	" x 12 "	129	" x 16 "
2	" x 4 "	583	" x 14 "	2	4 x 6 ft. 6 in.
5	" x 4 ft. 6 in.	289	" x 15 "	400	" x 14 "
20	" x 5 "	373	" x 16 "	659	" x 16 "
13	" x 5 ft. 6 in.	14	" x 18 "	134	" x 18 "
289	" x 6 "	6	2½ x 3 "	3	" x 20 "
3	" x 6 ft. 6 in.	1	" x 9 ft. 6 in.	....	.....
5	" x 7 "	82	" x 12 "	....	.....

Sizes shown as not on hand are being made and are daily expected from mill.

PRICE LIST.
LAP-WELDED BOILER TUBES.

Outside Diameter in Inches.	PRICE (per foot.)	Thickness Birmingham Wire Gauge.	Thickness in Inches.	Weight per ft., Pounds. (Nominal.)	Heat. Surface in feet per ft. of Tube in length.
1	.37	13	.095	.70	.2618
1¼	.35	13	.095	.90	.3272
1½	.32	13	.095	1.24	.3927
1¾	.32	13	.095	1.66	.4581
2	.30	13	.095	1.91	.5236
2¼	.36	13	.095	2.16	.5891
2½	.36	12	.109	2.75	.6545
2¾	.39	12	.109	3.04	.7200
3	.39	12	.109	3.33	.7854
3¼	.45	11	.120	3.96	.8508
3½	.48	11	.120	4.28	.9163
3¾	.55	11	.120	4.60	.9818
4	.60	10	.134	5.47	1.0472
4½	.69	10	.134	6.17	1.1781
5	.82	9	.148	7.58	1.3090
6	1.08	8	.165	10.16	1.5708
7	1.33	8	.165	11.90	1.8326
8	1.70	8	.165	13.65	2.0944
9	2.25	7	.180	16.76	2.3562
10	2.76	6	.208	21.00	2.6180
11	3.30	5	.220	25.00	.....
12	3.77	4¼	.229	28.50	.....
13	4.43	4	.238	32.06	.....
14	5.04	3½	.248	36.00	.....
15	5.87	3	.259	40.60	.....
16	6.50	2½	.270	45.20	.....

These prices are for tubes up to 20 feet long.
For tubes in excess of that length, 10 per cent. will be added to the net of invoice.
See page 92 for price list of Extra Gauges of Boiler Tubes.

STEEL "I" BEAMS.

IN STOCK.

No. Beams in Stock.	Size.	Weight per ft.	Length.	No. Beams in Stock.	Size.	Weight per ft.	Length.
8	3 in.	5½ lbs.	under 20 ft	.....	7 in.	20 lbs.	under 20 ft
1	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
76	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
25	"	"	over 40 ft	.....	"	"	over 40 ft
.....	4 in.	7½ lbs.	under 20 ft	19	8 in.	18 lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
125	"	"	30 to 40 ft	....	"	"	30 to 40 ft
114	"	"	over 40 ft	124	"	"	over 40 ft
.....	5 in.	9¾ lbs.	under 20 ft	.....	"	23 lbs	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
.....	"	"	over 40 ft	.....	"	"	over 40 ft
.....	"	12¼ lbs.	under 20 ft	.....	"	25 lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
.....	"	"	over 40 ft	.....	"	"	over 40 ft
.....	"	13⅝ lbs.	under 20 ft	47	9 in.	21 lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	1	"	"	30 to 40 ft
.....	"	"	over 40 ft	.....	"	"	over 40 ft
.....	"	14⅞ lbs.	under 20 ft	2	"	25 lbs.	under 20 ft
.....	"	"	20 to 30 ft	1	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
.....	"	"	over 40 ft	.....	"	"	over 40 ft
.....	6 in.	12¼ lbs.	under 20 ft	3	10 in.	25 lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
62	"	"	over 40 ft	.....	"	"	over 40 ft
.....	"	13 lbs.	under 20 ft	8	"	30 lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
.....	"	"	over 40 ft	28	"	"	over 40 ft
.....	"	17¼ lbs.	under 20 ft	.....	"	33 lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
.....	"	"	over 40 ft	.....	"	"	over 40 ft
12	7 in.	15 lbs.	under 20 ft	15	12 in.	31½ lbs.	under 20 ft
.....	"	"	20 to 30 ft	1	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
46	"	"	over 40 ft	59	"	"	over 40 ft

Sizes shown as not on hand are being made and are daily expected from mill.

We can cut Beams to lengths ordered, and punch and frame them, according to specifications, here in Chicago.

Order by weight or section, but not both, as sections vary slightly from time to time.

See page 82 for Beam Weights and Measurements.

Sizes shown as not on hand are being made and are daily expected from mill.

STEEL "I" BEAMS.
IN STOCK.

No. Beams in Stock.	Size.	Weight per ft.	Length.	No. Beams in Stock.	Size.	Weight per ft.	Length.
6	12 in.	35 lbs.	under 20 ft	.....	15 in.	45 lbs.	20 to 30 ft
.....	"	"	20 to 30 ft	.....	"	"	30 to 40 ft
.....	"	"	30 to 40 ft	.....	"	"	over 40 ft
.....	"	"	over 40 ft	24	"	50 lbs.	under 20 ft
.....	"	36 lbs.	under 20 ft	3	"	"	20 to 30 ft
.....	"	"	20 to 30 ft	.....	"	"	30 to 40 ft
.....	"	"	30 to 40 ft	28	"	"	over 40 ft
.....	"	"	over 40 ft	37	"	60 lbs.	under 20 ft
26	"	40 lbs.	under 20 ft	1	"	"	20 to 30 ft
1	"	"	20 to 30 ft	1	"	"	30 to 40 ft
.....	"	"	30 to 40 ft	25	"	"	over 40 ft
8	"	"	over 40 ft	2	"	70 lbs.	under 20 ft
2	"	50 lbs.	under 20 ft	3	"	"	20 to 30 ft
.....	"	"	20 to 30 ft	9	18 in.	55 lbs.	under 20 ft
.....	"	"	20 to 40 ft	.....	"	"	20 to 30 ft
.....	"	"	over 40 ft	.....	"	"	30 to 40 ft
.....	15 in.	41 lbs.	under 20 ft	.....	"	"	over 40 ft
.....	"	"	20 to 30 ft	13	20 in.	65 lbs.	under 20 ft
.....	"	"	30 to 40 ft	.....	"	"	20 to 30 ft
.....	"	"	over 40 ft	.....	"	"	30 to 40 ft
33	"	42 lbs.	under 20 ft	.....	"	"	over 40 ft
.....	"	"	20 to 30 ft	3	24 in.	80 lbs.	under 20 ft
.....	"	"	30 to 40 ft	.....	"	"	20 to 30 ft
.....	"	"	over 40 ft	.....	"	"	30 to 40 ft
.....	"	45 lbs.	under 20 ft	.....	"	"	over 40 ft

We can cut Beams to lengths ordered, and punch and frame them, according to specifications, here in Chicago.

Order by weight or section, but not both, as sections vary slightly from time to time.

See page 82 for Beam Weights and Measurements.

STEEL TEES.
IN STOCK.

No. Bars.	Size.
48	$1\frac{1}{2}$ x $1\frac{1}{2}$ x $\frac{3}{16}$
.....	2 x 2 x $\frac{1}{4}$
.....	2 x 2 x $\frac{5}{16}$
.....	$2\frac{1}{2}$ x $2\frac{1}{2}$ x $\frac{5}{16}$
89	3 x 3 x $\frac{5}{16}$
8	3 x 3 x $\frac{3}{8}$
58	$3\frac{1}{2}$ x 3 x $\frac{5}{16}$
58	$3\frac{1}{2}$ x 3 x $\frac{3}{8}$
9	$3\frac{1}{2}$ x 3 x $\frac{1}{2}$
88	$3\frac{1}{2}$ x $3\frac{1}{2}$ x $\frac{3}{8}$
21	$3\frac{1}{2}$ x $3\frac{1}{2}$ x $\frac{1}{2}$

Bars are 15 feet long or over.

See page 81 for weights Tees.

STEEL "Z" BARS.
IN STOCK.

No. Bars.	Size.
10	3 in. web x $\frac{1}{4}$ thick.
1	3 " " x $\frac{5}{16}$ "
.....	4 " " x $\frac{1}{4}$ "
19	5 " " x $\frac{5}{16}$ "
16	5 " " x $\frac{3}{8}$ "
29	6 " " x $\frac{3}{8}$ "
23	6 " " x $\frac{1}{2}$ "
2	6 " " x $\frac{9}{16}$ "
2	6 " " x $\frac{11}{16}$ "
.....	.....
.....	.....

Bars are 15 feet long or over.

See page 87 for weights "Z" Bars.

STEEL CHANNELS.

IN STOCK.

No. Chan'ls in Stock.	Size.	Weight per foot.	Length.	No. Chan'ls in Stock.	Size.	Weight per foot.	Length.
40	3 in.	4 lbs.	under 20 ft	.....	9 in.	20½ lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
11	"	"	over 40 ft	.....	"	"	over 40 ft
21	4 in.	5¼ lbs.	under 20 ft	1	10 in.	15 lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	1	"	"	30 to 40 ft
1	"	"	over 40 ft	.....	"	"	over 40 ft
62	5 in.	6½ lbs.	under 20 ft	110	12 in.	20½ lbs.	under 20 ft
.....	"	"	20 to 30 ft	1	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
2	"	"	over 40 ft	.....	"	"	over 40 ft
38	6 in.	8 lbs.	under 20 ft	4	"	25 lbs.	under 20 ft
2	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
6	"	"	over 40 ft	.....	"	"	over 40 ft
17	7 in.	9¾ lbs.	under 20 ft	11	"	30 lbs.	under 20 ft
.....	"	"	20 to 30 ft	7	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
.....	"	"	over 40 ft	.....	"	"	over 40 ft
27	8 in.	11¼ lbs.	under 20 ft	35	"	35 lbs.	under 20 ft
.....	"	"	20 to 30 ft	1	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
6	"	"	over 40 ft	.....	"	"	over 40 ft
.....	"	13⅝ lbs.	under 20 ft	10	15 in.	33 lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	1	"	"	30 to 40 ft
.....	"	"	over 40 ft	50	"	"	over 40 ft
56	9 in.	13¼ lbs.	under 20 ft	.....	"	35 lbs.	under 20 ft
.....	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
.....	"	"	over 40 ft	.....	"	"	over 40 ft
25	"	16⅝ lbs.	under 20 ft	.....	"	50 lbs.	under 20 ft
2	"	"	20 to 30 ft	.....	"	"	20 to 30 ft
.....	"	"	30 to 40 ft	.....	"	"	30 to 40 ft
.....	"	"	over 40 ft	17	"	"	over 40 ft
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....

Sizes shown as not on hand are being made and are daily expected from mill.

We can cut Channels to lengths ordered, and punch and frame them, according to specifications, here in Chicago.

Order by weight or section, but not both, as sections vary slightly, from time to time.

See page 81 for Channel Weights and Measurements.

STEEL FILLET ANGLES.

IN STOCK.

Sizes shown as not on hand are being made and are daily expected from mill.

No. Bars.	Size.	No. Bars.	Size.
698	$\frac{3}{4}$ x $\frac{3}{4}$ x $\frac{1}{8}$	95	$3\frac{1}{2}$ x $3\frac{1}{2}$ x $\frac{1}{8}$
1162	1 x 1 x $\frac{1}{8}$	.....	" x " x $\frac{5}{8}$
1096	" x " x $\frac{3}{16}$	6	4 x 3 x $\frac{5}{16}$
1550	$1\frac{1}{4}$ x $1\frac{1}{4}$ x $\frac{3}{16}$	43	" x " x $\frac{3}{8}$
1447	$1\frac{1}{2}$ x $1\frac{1}{2}$ x $\frac{3}{16}$	2	" x " x $\frac{7}{16}$
.....	" x " x $\frac{1}{4}$	.....	" x " x $\frac{1}{2}$
105	$1\frac{3}{4}$ x $1\frac{3}{4}$ x $\frac{3}{16}$	3	" x " x $\frac{9}{16}$
687	" x " x $\frac{1}{4}$	2	" x " x $\frac{7}{8}$
50	2 x 2 x $\frac{3}{16}$	187	4 x 4 x $\frac{3}{16}$
118	" x " x $\frac{1}{4}$	9	" x " x $\frac{1}{4}$
187	" x " x $\frac{5}{16}$	14	" x " x $\frac{5}{16}$
7	$2\frac{1}{4}$ x $2\frac{1}{4}$ x $\frac{1}{8}$	165	" x " x $\frac{3}{8}$
3	" x " x $\frac{3}{16}$	5	" x " x $\frac{7}{16}$
531	" x " x $\frac{1}{4}$	174	" x " x $\frac{1}{2}$
144	" x " x $\frac{5}{16}$	1	$4\frac{1}{2}$ x 3 x $\frac{5}{16}$
230	$2\frac{1}{2}$ x 2 x $\frac{3}{16}$	15	" x " x $\frac{3}{8}$
.....	" x " x $\frac{1}{4}$	1	$4\frac{1}{2}$ x $3\frac{1}{2}$ x $\frac{3}{4}$
87	" x " x $\frac{5}{16}$	62	5 x 3 x $\frac{1}{4}$
.....	" x " x $\frac{3}{8}$	41	" x " x $\frac{5}{16}$
89	$2\frac{1}{2}$ x $2\frac{1}{2}$ x $\frac{3}{16}$	66	" x " x $\frac{3}{8}$
17	" x " x $\frac{1}{4}$	11	" x " x $\frac{7}{16}$
216	" x " x $\frac{5}{16}$	3	" x " x $\frac{1}{2}$
79	" x " x $\frac{3}{8}$	9	" x " x $\frac{9}{16}$
114	3 x 2 x $\frac{1}{4}$	4	" x " x $\frac{11}{16}$
89	" x " x $\frac{5}{16}$	96	5 x $3\frac{1}{2}$ x $\frac{3}{8}$
32	" x " x $\frac{3}{8}$	55	" x " x $\frac{1}{2}$
9	" x " x $\frac{7}{16}$	1	5 x 5 x $\frac{3}{8}$
3	" x " x $\frac{1}{2}$	71	" x " x $\frac{1}{2}$
224	3 x $2\frac{1}{2}$ x $\frac{1}{4}$	.....	6 x $3\frac{1}{2}$ x $\frac{3}{8}$
.....	" x " x $\frac{5}{16}$	27	" x " x $\frac{7}{16}$
26	" x " x $\frac{3}{8}$	80	" x " x $\frac{1}{2}$
4	" x " x $\frac{1}{2}$	19	" x " x $\frac{9}{16}$
40	3 x 3 x $\frac{3}{16}$	15	" x " x $\frac{5}{8}$
222	" x " x $\frac{1}{4}$	1	" x " x $\frac{3}{4}$
8	" x " x $\frac{5}{16}$	16	6 x 4 x $\frac{5}{16}$
492	" x " x $\frac{3}{8}$	8	" x " x $\frac{1}{2}$
3	$3\frac{1}{2}$ x $2\frac{1}{2}$ x $\frac{1}{4}$	12	" x " x $\frac{9}{16}$
29	" x " x $\frac{5}{16}$	.....	" x " x $\frac{3}{4}$
.....	" x " x $\frac{3}{8}$	8	" x " x $\frac{5}{8}$
.....	" x " x $\frac{7}{16}$	7	" x " x $\frac{7}{8}$
160	$3\frac{1}{2}$ x 3 x $\frac{1}{4}$	73	6 x 6 x $\frac{3}{8}$
68	" x " x $\frac{5}{16}$	24	" x " x $\frac{7}{16}$
110	" x " x $\frac{3}{8}$	68	" x " x $\frac{1}{2}$
6	" x " x $\frac{5}{8}$	1	" x " x $\frac{5}{8}$
53	$3\frac{1}{2}$ x $3\frac{1}{2}$ x $\frac{1}{4}$	.....	" x " x $\frac{3}{4}$
143	" x " x $\frac{5}{16}$	1	" x " x $\frac{7}{8}$
317	" x " x $\frac{3}{8}$	.....	.....

All bars are 20 feet long or over.
See page 80 for weights of Angles.
Square Root Angle furnished when desired.

TURNED STEEL SHAFTING.



IN STOCK.

No. Bars.	Dia. in Inches.	Length.	Weight per foot in lbs.	LIST PRICE per lb.
17	6	Random	96.14	8 cts
32	5 15/16	"	94.14	7½cts
22	5½	"	80.77	
53	5 7/16	"	78.95	7 cts
25	5	"	67.45	
50	4 15/16	"	65.50	
14	4 3/4	"	60.88	6½cts
3	4 11/16	"	58.66	
25	4½	"	54.11	
152	4 7/16	"	52.62	
1	4 3/8	"	51.80	
30	4¼	"	48.26	6 cts
58	4 3/16	"	47.40	
91	4	"	42.75	
230	3 15/16	"	41.25	
15	3¾	"	39.95	
27	3 3/4	"	37.57	
30	3 11/16	"	36.40	5½cts
...	3⅝	"	35.20	
46	3½	"	32.73	
652	3 7/16	"	31.58	
16	3⅜	"	30.43	
100	3¼	"	28.22	5¼cts
129	3 3/16	"	27.16	
29	3⅛	"	26.09	
1115	3	"	24.05	
150	2 15/16	"	23.06	
36	2⅞	"	22.09	
3	2 13/16	"	21.15	
89	2¾	"	20.21	
78	2 11/16	"	19.31	
50	2⅝	"	18.41	
1	2 9/16	"	17.55	
185	2½	"	16.70	
40	2 7/16	"	15.89	
40	2⅜	"	15.07	
9	2 5/16	"	14.35	5 cts
31	2¼	"	13.52	
125	2 3/16	"	12.80	
38	2⅛	"	12.07	
...	2 1/16	"	11.35	
158	2	"	10.69	
831	1 15/16	"	10.03	
168	1⅞	"	9.30	
25	1 13/16	"	8.78	
80	1¾	"	8.18	
720	1 11/16	"	7.61	
37	1⅝	"	7.06	

No. Bars.	Dia. in Inches.	Length.	Weight per foot in lbs.	LIST PRICE per lb.
200	1 9/16	Random	6.52	
40	1½	"	6.01	5 cts
6	1 15/32	"	5.60	
650	1 7/16	"	5.52	
...	1 13/32	"	5.26	
200	1⅜	"	5.05	
224	1 5/16	"	4.61	
211	1¼	"	4.17	
...	1 3/16	"	3.86	
318	1⅛	"	3.77	
461	1⅛	"	3.38	
...	1 3/32	"	3.20	
...	1 1/16	"	3.11	
292	1 1/16	"	3.02	5½cts
288	1	"	2.68	
...	31/32	"	2.52	
500	15/16	"	2.35	
10	29/32	"	2.20	
192	7/8	"	2.05	
...	27/32	"	1.94	
...	53/64	"	1.90	
204	13/16	"	1.77	
1100	3/4	"	1.50	
...	23/32	"	1.38	
239	11/16	"	1.26	
...	21/32	"	1.17	
716	5/8	"	1.05	6 cts
...	19/32	"	1.00	
277	9/16	"	.845	
592	½	"	.667	
...	15/32	"	.586	
145	7/16	"	.511	7 cts
...	13/32	"	.450	
150	3/8	"	.375	
.....	11/32	"	.320	8½cts
....	5/16	"	.260	
.....	¼	"	.167	
.....	7/32	"	.130	10cts
.....	3/16	"	.095	

Sizes shown as not on hand are being made and are daily expected from mill.

NOTICE.

We have several thousand pieces of short lengths of shafting in all sizes from ½ in. to 6 in. dia.

Above prices are for shafts from 1 foot to 24 feet long inclusive.
We can furnish shafts any length desired.
All shafts are made according to U. S. Standard Gauge.
An extra charge will be made for boxing on all shipments.
See opposite page for list of extras.
Milled Key-Seats at reasonable rates.
See page 61 for cut of Portable Keyseater.

Sizes shown as not on hand are being made and are daily expected from mill.

SQUARES.

For Keys, Splines, Square Shafts, etc.

IN STOCK.

No. Bars	Size in Inches.	Length.	Weight per foot in lbs.	LIST PRICE per lb.
.....	3	Random	30.61	8 cts
.....	2¾	"	25.72	
.....	2½	"	21.26	
.....	2¼	"	17.25	
16	2	"	13.60	
9	1¾	"	10.41	
.....	1⅝	"	8.98	
20	1½	"	7.66	
.....	1⅜	"	6.43	
30	1¼	"	5.31	
40	1⅛	"	4.30	
.....	1 1/16	"	3.85	
50	1	"	3.40	

No. Bars	Size in Inches.	Length.	Weight per foot in lbs.	LIST PRICE per lb.
.....	15/16	Random	2.99	8 cts
25	7/8	"	2.60	
.....	13/16	"	2.25	
100	3/4	"	1.92	
25	11/16	"	1.61	10cts
200	5/8	"	1.34	
25	9/16	"	1.08	
200	1/2	"	.850	
100	7/16	"	.652	12cts
150	3/8	"	.479	
400	5/16	"	.332	
.....	9/32	"	.270	
200	1/4	"	.213	

Above prices are for Shafts from 2 feet to 24 feet long inclusive.
We can cut above to any length desired.

EXTRA FOR SHAFTS.

For Shafts 6 in. to 11¾ in. long, ½ cent per lb. net extra.
" " 3 " 5¾ " 1 " " "
" " shorter than 3 in. special prices will be quoted.
Squares, 12 in. to 23¾ in. long, ½ cent per lb. net extra.
Hexagons, 12 in. to 23¾ in. long, ½ cent per lb. net extra.
For Shafts over 24 ft. long and less than 30 ft., ½ cent per lb. net extra.
" " " 30 " " " " " 35 " 1 " " "
" " " 35 " " " " " 40 " 1½ " " "
" " " 40 " " " " " 45 " 2 " " "
" " " 45 " " " " " 50 " 2½ " " "

The extra for cutting Squares to short lengths is twice that for Rounds.
Pump and Piston Rods, ½ cent per lb. net extra.

HEXAGONS.

Size.	Weight per foot in lbs.	LIST PRICE per lb.
1 7/8	10.32	7 cts.
1 3/4	9.00	
1 11/16	8.37	
1 5/8	7.76	
1 9/16	7.17	
1 1/2	6.62	
1 7/16	6.07	
1 3/8	5.57	
1 5/16	5.07	
1 1/4	4.60	
1 3/16	4.15	
1 1/8	3.73	
1 1/16	3.33	
1	2.94	
15/16	2.58	
7/8	2.25	

Size.	Weight per foot in lbs.	LIST PRICE per lb.
13/16	1.91	7½ cts.
3/4	1.66	
11/16	1.40	
5/8	1.15	
9/16	.93	
17/32	.82	8 cts.
1/2	.73	
15/32	.64	
7/16	.56	
13/32	.50	
3/8	.43	
11/32	.36	10 cts.
5/16	.29	
9/32	.23	
1/4	.195	
.....	.....	

Above prices are for shafts from 2 feet to 24 feet long inclusive.

TOOL STEEL.

FIRTH'S BEST TOOL STEEL.

This is our standard brand, and is strongly recommended for all general purposes. It is fine and tough in quality, and very regular in temper and is especially adapted for such purposes as Cold Chisels, Taps, Dies, Reamers, Snaps, Hammers, Side Sets, Beading Tools, Cape Chisels, Fullers, Swages, Flatters, Hardies, Shear Blades, Punches and Dies, Threading Dies, Cutting Dies, Milling Cutters, Drills, Taps and all general shop tools.

We also supply this brand in the form of bars and blocks, especially adapted for Deep-Stamping and Drop-Forging Dies. **Price, 14 cents per lb. base.**

FIRTH'S STERLING SPECIAL STEEL.

This brand is made from the choicest grade of Swedish Iron and is exceedingly durable and tough, and while it is made for the same purposes as the above mentioned steel it costs more, owing to its being made from the most expensive iron produced in the world, and in the hands of first class workmen it will be found superior to the other in wearing quality and severe work, where extreme quality counts. **Price, 17 cents per lb. base.**

FIRTH'S EXTRA SPECIAL STEEL.

This steel is intended for use in Lathe, Planer and Screw Machine Tools where extreme hardness and long wearing qualities are particularly desired, and in such tools as have the edge well "backed up," as mentioned above, and is especially recommended for turning and corrugating Chilled Rolls. It may also be used for Inserted Reamer and Milling Cutter Teeth, Scrapers, Burnishers, etc., but it is not recommended for use in Solid Milling Cutters or Reamers of large diameters, except in the hands of most expert workmen. This steel is not intended for Chisels, Sets, etc., or any tool that gets heavy blows. Though the price of this steel may seem high it will be found the cheapest in the end when time saving qualities are considered for the above tools. **Price, 35 cents per lb. base.**

FIRTH'S STERLING SELF-HARDENING STEEL.

This steel is made for Lathe and Planer tools for rough, rapid work where the quick removal of the surplus stock is desired more than a fine finish, and where the increased amount of speed would generate a heat that would draw the temper on carbon steels hardened in the regular way. This steel can be ground on dry emery wheels for work described above without injury and will be found equal to any imported, and superior to any sold at the same price. It is especially recommended for turning car wheel tires and all sorts of cast iron work. **Price, 40 cents per lb. base.**

The prices quoted above are for steels that we can recommend for all labor-saving tools where the best thing obtainable is desired, but if something cheaper is wanted, we can supply steel at any price down to 3½ cts. per lb.

See opposite page for list of sizes carried in stock.

We are prepared to furnish steel for any purpose.

TOOL STEEL.

FIRTH-STERLING STEEL CO.'S BRANDS.

FIRTH'S BEST TOOL STEEL is our standard brand, and we strongly recommend it for all general purposes. It is strong and *uniform* and thoroughly reliable. We carry a full stock of the following sizes:

¼ Round.	⅛ Square.	¼ Octagon.	FLAT.		
5/16 "	3/16 "	5/16 "			
3/8 "	¼ "	3/8 "			
7/16 "	5/16 "	7/16 "	3-16 x ½	5-8 x 1	1 x 1¼
½ "	3/8 "	½ "	" x 9/16	" x 1¼	" x 1½
9/16 "	7/16 "	9/16 "	" x ¾	" x 1½	" x 1¾
5/8 "	½ "	5/8 "	1-4 x 3/8	" x 1¾	" x 2
11/16 "	9/16 "	11/16 "	" x ½	" x 2	" x 2¼
¾ "	5/8 "	¾ "	" x 9/16	" x 2¼	" x 2½
13/16 "	¾ "	13/16 "	" x ¾	" x 2½	" x 2¾
⅞ "	7/8 "	⅞ "	" x 7/8	" x 2¾	" x 3
15/16 "	15/16 "	15/16 "	" x 1	" x 3	" x 3¼
1 "	1 "	1 "	" x 1¼	" x 3¼	" x 3½
1⅛ "	1⅛ "	1⅛ "	3-8 x ½	" x 3½	" x 3¾
1¼ "	1¼ "	1¼ "	" x 5/8	3-4 x 1	" x 4
1⅜ "	1⅜ "	1⅜ "	" x ¾	" x 1¼	" x 4¼
1½ "	1½ "	1½ "	" x 1	" x 1½	" x 4½
1⅝ "	1⅝ "	5/8-¼ "	1-2 x 5/8	" x 1¾	1 1-4 x 3½
1¾ "	1¾ "	¾-¼ "	" x ¾	" x 2	" x 4
1⅞ "	1⅞ "	⅞-¼ "	" x 7/8	" x 2¼	" x 4¼
2 "	2 "	.....	" x 1	" x 2½	" x 4½
2¼ "	.....	.....	" x 1¼	" x 2¾	" x 4¾
2½ "	.....	.....	" x 1½	" x 3	" x 5
2¾ "	.....	.....	" x 1¾	" x 3½	1 1-2 x 2
3 "	.....	.....	" x 2	" x 4	1 3-4 x ¾
3¼ "	.....	.....	" x 2¼	7-8 x 2	.....
3½ "	.....	.....	" x 2½	" x 2½	.....
3¾ "	.....	.....	" x 2¾	" x 3	.....
4 "	.....	.....	" x 3	.....	.....
4½ "	.....	.....	" x 3¼	.....	.....

We carry above sizes Annealed in Rounds and Flats.

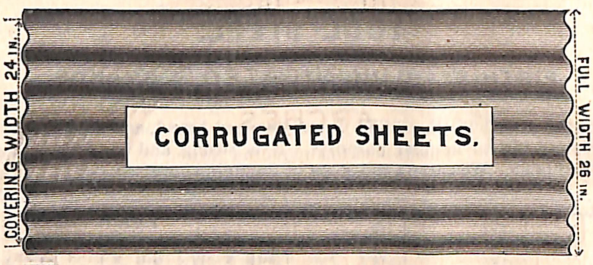
We also carry a well assorted stock of the above sizes in **FIRTH-STERLING SPECIAL** which is particularly adapted to the most expensive tool making.

We carry the above sizes in this grade Annealed in Rounds and Flats.

We also carry a complete stock of **FIRTH'S EXTRA SPECIAL** in Squares and Flats. This steel is particularly adapted for cutting tools for the hardest kind of work, and should only be used by experts. Printed directions furnished with each bill.

We also carry all machine shop sizes in **FIRTH-STERLING SELF-HARDENING STEEL.**

Want of space prevents us showing all sizes we carry in stock of the different grades, but we can furnish any special size desired in three days.



PAINTED.		GALVANIZED.	
STOCK ON HAND.	Size.	STOCK ON HAND.	Size.
990 Squares.	No. 18 x 26 x 96	990 Squares.	No. 18 x 26 x 96
999 "	" x " x 120	999 "	" x " x 120
1010 "	No. 20 x " x 72	1012 "	No. 20 x " x 96
1020 "	" x " x 84	1015 "	" x " x 120
1025 "	" x " x 96	1020 "	No. 22 x " x 96
990 "	" x " x 108	1011 "	" x " x 120
950 "	" x " x 120	995 "	No. 24 x " x 96
960 "	No. 22 x " x 72	999 "	" x " x 120
980 "	" x " x 84	1022 "	No. 26 x " x 96
995 "	" x " x 96	1023 "	" x " x 108
1001 "	" x " x 108	1001 "	" x " x 120
1003 "	" x " x 120	990 "	No. 28 x " x 72
993 "	No. 24 x " x 72	995 "	" x " x 84
999 "	" x " x 84	998 "	" x " x 96
1022 "	" x " x 96	999 "	" x " x 108
1001 "	" x " x 108	1020 "	" x " x 120
1028 "	" x " x 120	.....	.....
1000 "	No. 26 x " x 96	.....	.....
1000 "	" x " x 108	.....	.....
910 "	" x " x 120	.....	.....
922 "	No. 28 x " x 72	.....	.....
1012 "	" x " x 84	.....	.....
1022 "	" x " x 96	.....	.....
1008 "	" x " x 108	.....	.....
993 "	" x " x 120	.....	.....

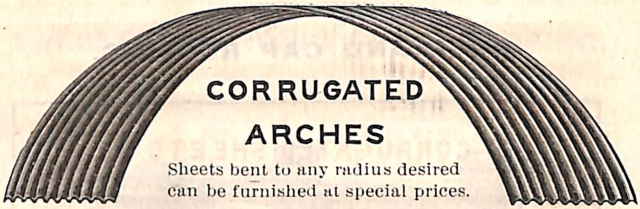
A Square means 100 feet square without laps.
All above sheets are 26 inches wide after corrugating and have 2½ inch corrugation ⅝ inch deep.
Sheets cut to any length can be furnished from stock at additional price per square.
Corrugated and Painted Sheets No. 22 and lighter can be furnished with 1¼ inch corrugations ¼ inch deep when desired.
Corrugated and Galvanized Sheets No. 24 and lighter can be furnished with 1¼ inch corrugations ¼ inch deep when desired.
Special corrugations of 1½, 2 and 3 inches furnished when desired at special price.

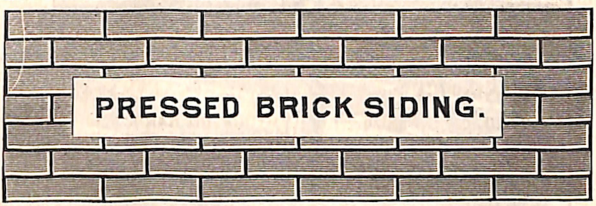
Sizes shown as not on hand are being made and are daily expected from mill.

TABLE OF WEIGHTS PER SQUARE.

Size.	PAINTED.	GALVANIZED.
No. 18	220 lbs.	236 lbs.
" 20	165 "	182 "
" 22	138 "	154 "
" 24	111 "	127 "
" 26	84 "	99 "
" 27	77 "	93 "
" 28	69 "	86 "

Sizes shown as not on hand are being made and are daily expected from mill.





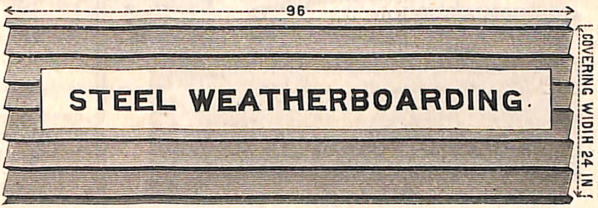
Description.	STOCK ON HAND.	Size.
PAINTED	450 Squares	No. 28 x 30 x 60
GALVANIZED	501 "	No. 28 x 30 x 60

A Square contains 8 sheets and weighs, Painted 68 lbs., Galvanized 80 lbs.



Description.	STOCK ON HAND.	Size.
PAINTED	461 Squares	No. 28 x 24 x 96
GALVANIZED	508 "	No. 28 x 24 x 96

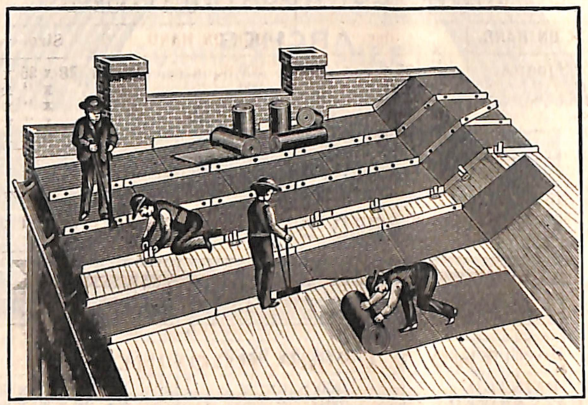
A Square contains 6¼ sheets and weighs, Painted 68 lbs., Galvanized, 83 lbs.



Description.	STOCK ON HAND.	Size.
PAINTED	499 Squares	No. 28 x 24 x 96
GALVANIZED	500 "	No. 28 x 24 x 96

A Square contains 6¼ sheets and weighs, Painted 68 lbs., Galvanized 83 lbs.

ROLL AND CAP ROOFING.



PAINTED.		GALVANIZED.	
STOCK ON HAND.	Size.	**STOCK ON HAND.**	Size.
500 Rolls.	**No. 28**x26 in. x 50 ft.	500 Rolls.	**No. 28**x26 in. x 50 ft.

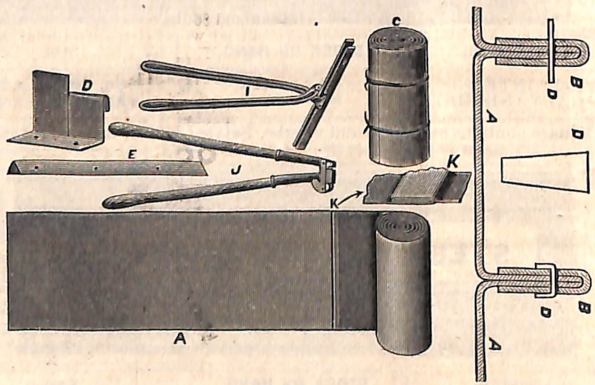
A Roll is 100 square feet.

Weight per square, Painted 75 lbs.; Galvanized, 93 lbs.

Price per square includes all necessary trimmings, such as Nails (¼ lb.), Caps (21), Cleats (20), Dry Paint for second coat (1 lb.), and Keys.

Tools loaned free of charge to put on roofing, provided transportation charges are paid both ways, and comprise Tongs, Punch and Squeezers

Sizes shown as not on hand are being made and are daily expected from mill.



A—Showing Sheets as put up ready to lay with cross-lock, and roofing turned. B—Cap finished. C—Strips put up to ship. D—Cleat or Fastener, and Key. E—Cap for Standing Seam. I—Roofing Tongs. J—Roofing Punch. K—Section showing Cross or Grooved Lock.

PRESSED STANDING SEAM ROOFING.

PAINTED.		GALVANIZED.	
STOCK ON HAND.	Size.	STOCK ON HAND.	Size.
450 Squares	No. 28 x 25 x 72	200 Squares	No. 28 x 25 x 72
490 "	" x " x 84	200 "	" x " x 84
510 "	" x " x 96	510 "	" x " x 96
480 "	" x " x 108	512 "	" x " x 108
500 "	" x " x 120	495 "	" x " x 120

Laps are 1 inch high.
Weight per square, Painted 70 lbs., Galvanized 88 lbs.
Price per square includes all necessary trimmings, such as Nails (½ lb.), Cleats (20), Dry Paint (1 lb.).
One squeezer furnished free of charge to put on roofing provided transportation charge is paid both ways.



PAINTED.		GALVANIZED.	
STOCK ON HAND.	Size.	STOCK ON HAND.	Size.
450 Squares	No. 28 x 24 x 72	205 Squares	No. 28 x 24 x 72
470 "	" x " x 84	190 "	" x " x 84
490 "	" x " x 96	512 "	" x " x 96
510 "	" x " x 108	508 "	" x " x 108
480 "	" x " x 120	491 "	" x " x 120

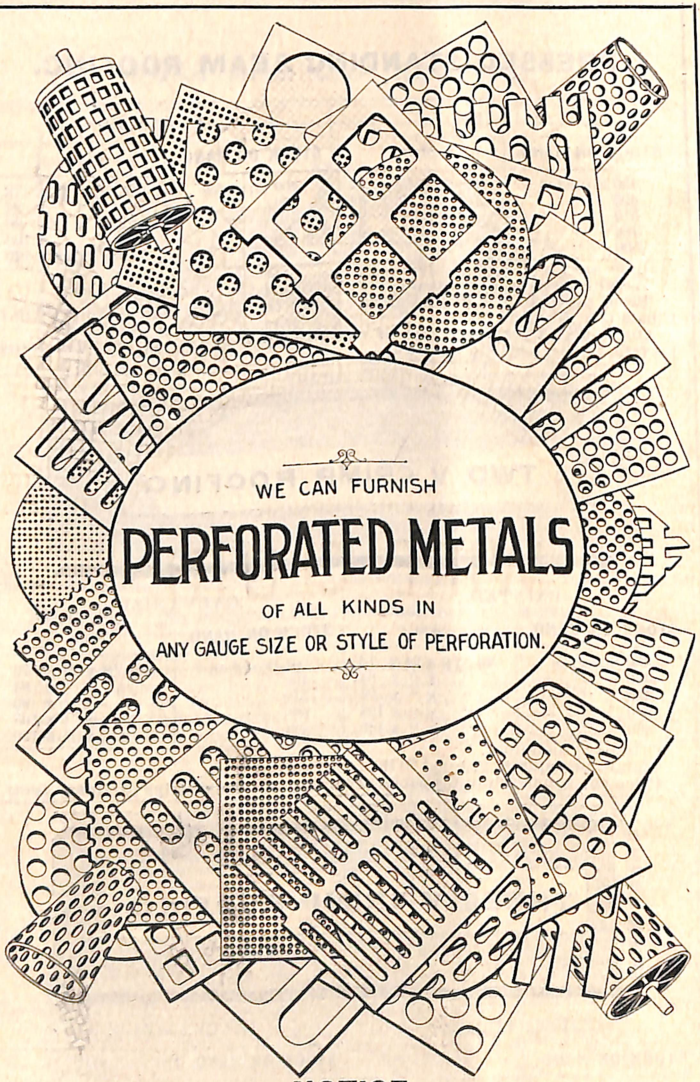
Crimps ¾ inch high.
Weight per square, Painted 70 lbs., Galvanized 86 lbs.
Price per square includes necessary triangular wood strips (50 lineal feet).



PAINTED.		GALVANIZED.	
STOCK ON HAND.	Size.	STOCK ON HAND.	Size.
510 Squares	No. 28 x 24 x 72	220 Squares	No. 28 x 24 x 72
500 "	" x " x 84	201 "	" x " x 84
513 "	" x " x 96	508 "	" x " x 96
516 "	" x " x 108	509 "	" x " x 108
492 "	" x " x 120	490 "	" x " x 120

Crimps ¾ inch high.
Weight per square, Painted 70 lbs., Galvanized 86 lbs.
Price per square includes necessary triangular wood strips (100 lineal feet).

Sizes shown as not on hand are being made and are daily expected from mill.



NOTICE.

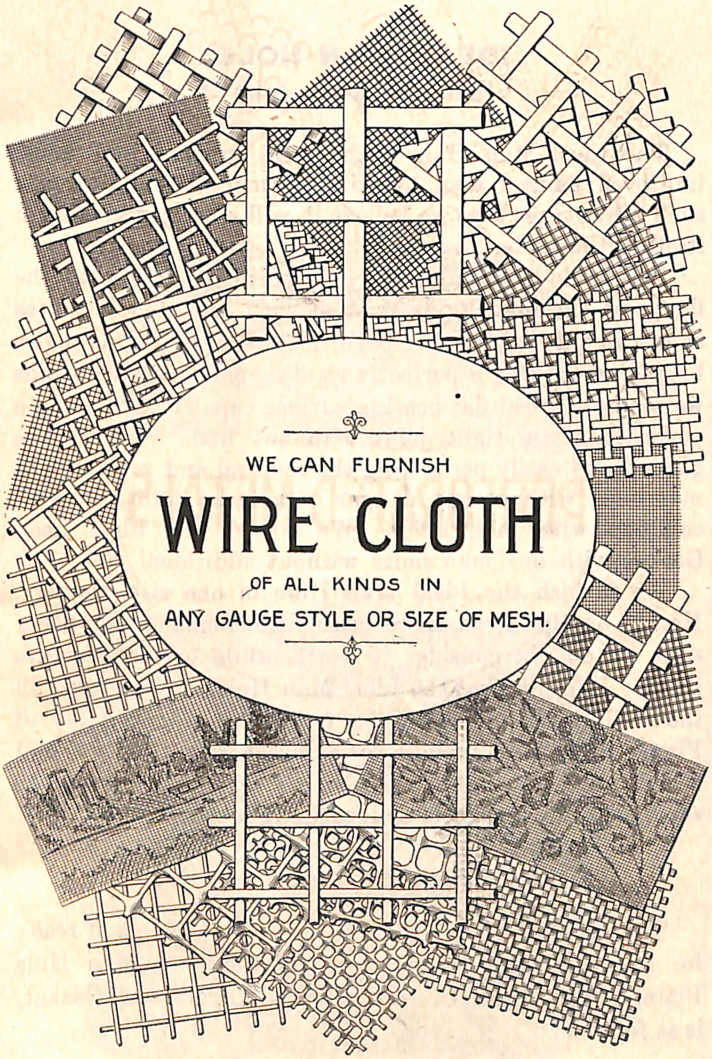
When enquiring for price give following information:

Size and gauge of each sheet with number wanted.

Size and style of perforation and how laid out.

Kind of metal desired.

When sheets are rolled state whether diameter is inside or outside measurement.



NOTICE.

When enquiring for price give following information:

Quantity desired.
Size of mesh.
Gauge of wire and width wanted.

IDEAL MAN-HOLE.

Pat. Mar. 17, '96. No. 556474.

The Ideal Man Hole is the most modern and latest improved flanged man hole in the market and possesses such advantages that we believe it will readily recommend itself to the trade.

It is made by forming the hole in such a way that the flange of the opening is parallel with the man head (as shown in cuts on opposite page) instead of at right angles to it, thus making a perfectly rigid flange. By this means we secure a broad flat bearing surface capable of forming a perfectly steam tight joint with but little wear on the gasket, and easily permitting the removal and replacing of man head without any danger of a leaky joint, as is so common with man holes. We furnish the Ideal Lead Gasket with our man holes without additional cost.

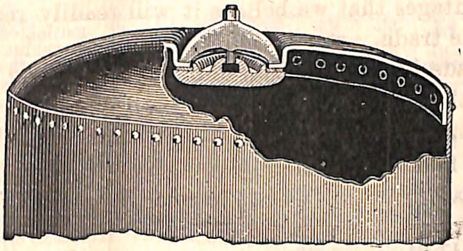
We furnish the Ideal Man Hole in one size, namely: No. 2, or 10x16, as there is so little demand for other sizes we do not consider it worth while to manufacture them. In order that the Ideal Man Hole may be used in the shell of a boiler we furnish for this purpose a plate of Flange Steel wide enough for a double row of rivets, and rolled to fit either the inside or outside diameter of the shell, with the man hole flanged in it in the regular way.

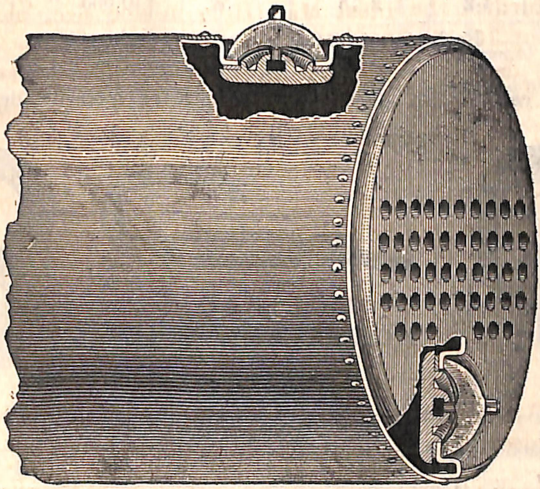
PRICE LIST.

The price of the Ideal Man Head complete and ready for use, including the Flanging of the Hole, Man Hole Plate, Pressed Steel Crabs, Bolts and Ideal Lead Gasket, is as follows:

No. 2 (10x16), - - - - -	$10.00.
Plate for shell rolled and flanged,	$ 3.00 extra.
McKim Copper Gasket - -	$ 1.50 "

IDEAL MAN-HOLE.





GALVANIZED STEEL WIRE STRAND.

For guying Smokestacks, etc.



PRICE LIST.

Stock on Hand.	Dia. of Strand.	PRICE per 100 feet.	Weight per 100 feet. (lbs.)	Estimated Breaking Strength.	7 Wires
2 Reels	3-32	$ .35	2¼	400 lbs.	No. 21
7 "	1-8	.45	3½	500 "	" 20
.....	9-64	.60	..	.... "	" 19
.....	5-32	.60	5	800 "	" 18
3 "	3-16	.80	8	1,000 "	" 17
4 "	7-32	1.15	..	.... "	" 16
10 "	1-4	1.15	13	1,750 "	" 15
3 "	17-64	1.60	..	.... "	" 14
.....	9-32	1.60	..	.... "	" 13
25 "	5-16	1.60	22	3,825 "	" 12
25 "	3-8	2.00	30	5,000 "	" 11
5 "	7-16	2.50	40	6,000 "	" 10
.....	15-32	3.15	..	.... "	" 9
6 "	1-2	3.15	52	10,000 "	" 8

Reels contain 3,000 feet or more in length.

We can furnish above in any length or quantity desired from stock in Chicago.







MALLEABLE HOOKS AND RINGS.

PRICE LIST.

Description.	Size of Strand.						
	1-8	3-16	1-4	5-16	3-8	7-16	1-2
Hooks and Eyes.	5 cts. each.	6 cts. each.	8 cts. each.	12 cts. each.	20 cts. each.	25 cts each.	30 cts. each.

We are prepared to furnish Wire Rope for any purpose.

McGREGOR STEEL BOILER BRACES.



Sizes shown as not on hand are being made and are daily expected from mill.

LIST OF BRACES IN STOCK.

Thickness in Inches.	Length of Braces in Inches.							
	24	30	36	42	48	54	60	72
3-8	575	600	960	930	850	380	200	131
7-16	400	550	900	738	500	229	128	325
1-2	500	480	230	508	671	580	506	481

Special lengths or thicknesses made to order.

TABLE OF PRESSED STEEL BRACES.

Showing number generally placed in Standard Tubular Boilers.

Length of Braces.	Diameter of Shell.								
	36	42	44	48	54	60	66	72	84
30	6	6	8	8	10	10	10	12	16
42	2	4	.....	.....	.....	.....	.....	.....	.....
48	.....	.....	4	4	6	6	8	8	10
60	.....	.....	.....	.....	.....	4	.....	.....	.....
72	.....	.....	.....	.....	.....	.....	4	4	6

The total number of braces in columns under each diameter of boiler represents whole number of braces used in boiler.

The above table is based on 100 lbs. pressure on boilers and braces $\frac{7}{16}$ in. thick and does not include dome braces.

EQUIVALENTS IN IRON.

Thickness of Brace. Inches.	Round Iron. Inches.	Square Iron. Inches.	Flat Iron. Inches.
3-8	$1\frac{1}{4}$	$1\frac{1}{8}$	2 x $\frac{5}{8}$
7-16	$1\frac{3}{8}$	$1\frac{1}{4}$	2 x $\frac{3}{4}$
1-2	$1\frac{1}{2}$	$1\frac{5}{16}$	$2\frac{1}{2}$ x $\frac{3}{4}$

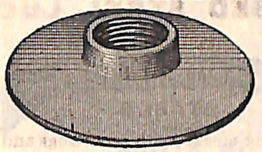
WEIGHTS OF McGREGOR STEEL BRACES.

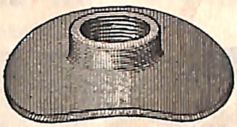
Averaged from actual weights.

Thickness in Inches.	Length of Braces in Inches.							
	24	30	36	42	48	54	60	72
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
3-8	11	13	14	16	19	21	24	27
7-16	13	15	17	20	21	24	27	31
1-2	15	17	19	21	24	27	29	35

The McGregor Brace weighs from 15 to 20 per cent. less than any other brace of same thickness and width of metal at foot or end.

FORGED PIPE FLANGES.





BENT FLANGES IN STOCK.

Diameter Flanges are Rolled to.	Diameter of Pipe.												
	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8
18	4	1	11	25	....	....	....	....	....	....	....	....	....
24	9	2	13	55	22	25	50	40	25	23	25	...	10
30	1	8	15	65	52	50	48	50	25	28	23	..	10
36	3	5	10	75	50	60	58	75	25	20	24	...	8
42	7	3	10	50	60	65	29	60	26	12	25	....	12
48	5	6	12	55	51	75	100	100	26	16	60	...	15
54	2	7	16	25	49	26	95	40	28	20	36	..	17
60	8	4	10	50	40	30	50	51	25	30	20	....	9
66	4	9	10	51	29	38	25	28	25	27	20	...	8
72	4	1	11	25	50	50	50	30	28	29	25	....	10
FLAT FLANGES	10	10	25	175	50	200	101	125	100	80	75		20

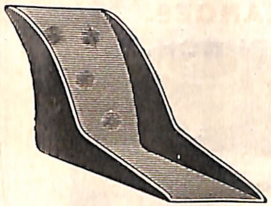
Special Flanges for Marine Work, and Flanges of special shapes or sizes, furnished promptly upon receipt of order.
Flanges larger than 6" dia. are made of Pressed Steel.

PRICE LIST OF FLANGES.

Size of Pipe.	Diameter of Flanges.	Thickness of Flanges.	Weight of Flanges.	List Price Plain.	List Price Threaded.
1 in.	6 in.	⅜ in.	3 lbs.	$2.00	$2.00
1¼ "	6 "	⅜ "	3 "	2.20	2.20
1½ "	6 "	⅜ "	3½ "	2.20	2.20
2 "	7⅜ "	⅜ "	5 "	2.40	2.40
2½ "	8¾ "	½ "	7 "	2.60	2.60
3 "	9¼ "	½ "	9½ "	2.80	2.80
3½ "	9¾ "	½ "	10 "	3.20	3.20
4 "	10⅛ "	½ "	12 "	3.50	3.50
4½ "	10¾ "	½ "	12½ "	3.85	3.85
5 "	11⅛ "	½ "	13 "	4.20	4.20
6 "	12⅝ "	½ "	17 "	4.80	4.80
7 "	13½ "	½ "	19 "	6.00	6.00
8 "	15 "	½ "	21 "	8.40	8.40
9 "	16½ "	⅝ "	22 "	14.00	14.00
10 "	17½ "	⅝ "	23 "	15.00	15.00

Flanges ordered with rims larger than listed above will be charged at special prices. Flanges bent to less than 24 inch circle with holes up to 8 in. dia. will be one-half list price extra, and Flanges 8 inches and larger rolled to less than 24 inch circle will be double list price.

Sizes shown as not on hand are being made and are daily expected from mill.



PRESSED STEEL LUGS.

Patented { Feb. 7, 1893. No. 491091.
Mar. 28, 1893. No. 494370.
Jan. 10, 1899. No. 617524.

TABLE

Showing measurements of Lugs and number in stock.

Description.	Diameter of Boilers.								
	36	42	44	48	54	60	66	72	78
Height from center of Boiler to base of Lug	5	5	6	6	7	7	8	8	9
Width	6	6	7	7	9	9	10	10	10
Length	9	9	11	11	13	13	15	15	15
Height	7	7	$8\frac{1}{2}$	$8\frac{1}{2}$	10	10	11	11	11
Thickness	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{9}{32}$	$\frac{9}{32}$	$\frac{5}{16}$	$\frac{5}{16}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{3}{8}$
Weight	9	9	15	15	24	24	36	36	36
STOCK ON HAND.....	300	410	320	510	620	510	310	260	105

PRESSED STEEL HANGERS.

Patented May 3, 1897. No. 362473.

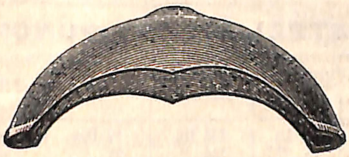
For Boilers, Tanks and Structures.



STOCK ON HAND.	Description.	PRICE.
550	Steel Hangers $\frac{1}{4}$ in. thick.	$ .75 each.
480	" " $\frac{9}{32}$ " "	1.00 "

PRESSED STEEL CRABS.

For Man-Holes and Hand-Holes.

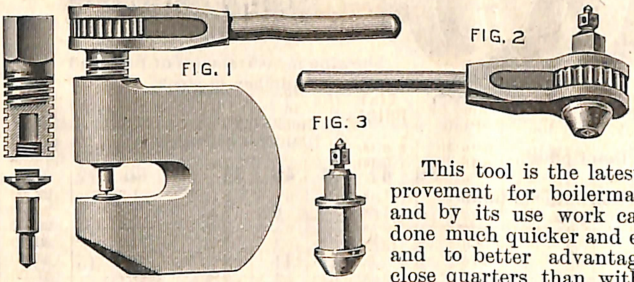


Price 60 cents each.

We can furnish these in any quantity desired.

Sizes shown as not on hand are being made and are daily expected from mill.

RATCHET SCREW PUNCH.



This tool is the latest improvement for boilermakers, and by its use work can be done much quicker and easier and to better advantage in close quarters than with the old style. The punch is made of forged steel in the regular way, with the exception that screw is made in such a manner that a *Ratchet Handle* can be fitted to it, and screw punch operated by a ratchet movement, instead of the old style bar, as in figure 1. The ratchet is detachable, and can be used on any screw punch made to fit it, and when not wanted for use with screw punch can be attached to *Ratchet Drill Socket*, shown in figure 3, and operated as an independent ratchet, capable of drilling holes up to 2 in. dia., as shown in figure 2, thus giving the boilermaker the double use of a ratchet and screw punch combined. We can furnish new screws operated by the ratchet for any screw punch in use at a slight advance in cost.

When Ratchet is not desired Screws bored with holes for turning by bar can be furnished.

PRICE LIST.

Size.	Will Punch. Hole.	Will Punch. Thick.	Depth of Throat.	Weight	Price.	Extra for Ratchet Handle.	Extra for Ratchet Drill Socket.	Extra Punch and Die.
No. 1	½ in.	5/16 in.	1½ in.	20 lbs.	$25.00	$15.00	$9.00	$3.50
" 2	3/4 "	5/8 "	2½ "	40 "	35.00	15.00	9.00	3.50
" 3	3/4 "	3/4 "	3 "	60 "	50.00	15.00	9.00	3.50
" 4	7/8 "	3/4 "	4 "	100 "	60.00	15.00	9.00	3.50

Depth of Throat is distance from center of Punch.
One Punch and Die only furnished with each Punch.
When ordering Punch state size of rivet holes to be punched.
These punches have large screws with cap on end, which can be quickly removed, thus permitting punches to be changed very easily.

CAST STEEL SCREW PUNCHES.

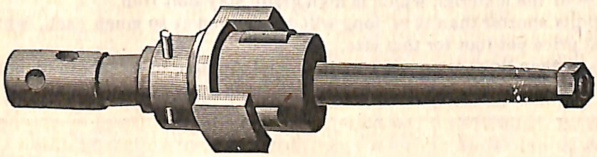
Size.	Will Punch. Hole.	Will Punch. Thick.	Depth of Throat.	Weight.	PRICE.	Extra Punch and Die.
No. 0	½ in.	¼ in.	1½ in.	17 lbs.	$24.00	$2.00
" 1	½ "	5/16 "	1½ "	27 "	30.00	2.00
" 2	3/4 "	⅓ "	2 "	40 "	40.00	2.00
" 3	3/4 "	3/4 "	2½ "	60 "	60.00	2.00
" 3½	3/4 "	3/4 "	3½ "	90 "	75.00	2.00
" 4	3/4 "	3/4 "	4 "	110 "	80.00	2.00

SECTIONAL SPRING EXPANDERS.



No in Stock.	Outside Dia. of Tube.	Thickness of Plate.	LIST PRICE.	No. in Stock.	Outside Dia. of Tube.	Thickness of Plate.	LIST PRICE.
3	1¼ in.	5-16 in.	$ 8.00	3	2½ in.	1-2 in.	$15.00
2	1½ "	5-16 "	9.00	.....	2¾ "	5-8 "	18.00
4	1½ "	3-8 "	9.00	6	3 "	1-2 "	22.00
2	1¾ "	5-16 "	11.00	6	3 "	1-2 "	22.00
4	1¾ "	3-8 "	11.00	.....	3¼ "	1-2 "	26.00
6	2 "	5-16 "	12.00	3	3½ "	1-2 "	30.00
18	2 "	3-8 "	12.00	15	3¼ "	1-2 "	30.00
2	2¼ "	5-16 "	13.00	12	4 "	1-2 "	33.00
4	2¼ "	3-8 "	13.00	3	4½ "	1-2 "	37.00
12	2½ "	3-8 "	15.00	.....	6 "	1-2 "	60.00

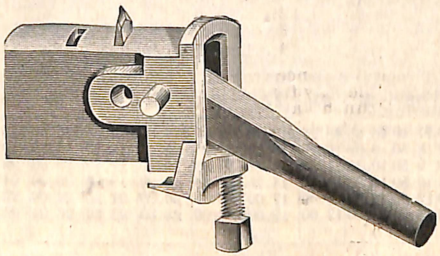
ROLLER EXPANDERS.



No. in Stock.	Outside Dia. of Tube.	LIST PRICE.	No. in Stock.	Outside Dia. of Tube.	LIST PRICE.	No. in Stock.	Outside Dia. of Tube.	LIST PRICE.
.....	1 inch	$10.00	12	2¼ inch	$12.00	24	3½ inch	$23.00
12	1¼ "	10.00	48	2½ "	14.00	24	4 "	30.00
6	1½ "	10.00	2	2¾ "	16.00	3	4½ "	40.00
36	1¾ "	10.00	48	3 "	18.00	.....	5 "	50.00
48	2 "	10.00	2	3¼ "	20.00	3	6 "	60.00

FLUE CUTTER.

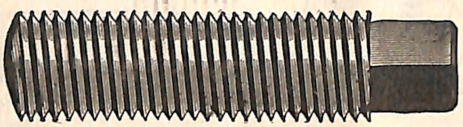
For removing old boiler flues.



Dia. of Tube.	2 in.	2¼ in.	2½ in.	3 in.	3½ in.	4 in.	4½ in.
LIST PRICE.	$10.00	$10.50	$11.00	$12.00	$12.50	$15.00	$17.50
STOCK ON HAND	2	2	2	3	2	2	2

Sizes shown as not on hand are being made and are daily expected from mill.

BOILER STAY BOLTS.



Quantity.	Diameter of Stay Bolts in Inches.						
	1-2	5-8	3-4	7-8	15-16 & 1	1 1-8	1 1-4
In lots of 50 ft. or more	36 cts.	38 cts.	39 cts.	40 cts.	43 cts.	47 cts.	51 cts.
In lots of less than 50ft	38 cts.	40 cts.	41 cts.	42 cts.	45 cts.	49 cts.	53 cts.

Standard sizes of above kept constantly on hand in Chicago.

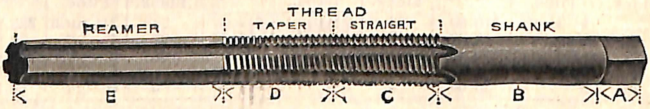
These prices are costs per foot for Stay Bolts 12-in. and longer, and include the cost of the material, which is high grade Stay Bolt Iron.

Stay Bolts shorter than 12 in. long will be charged at so much each, which is list price per foot for that size.

Heads of Stay Bolts are made 1-in. long, and are figured in length of bolt.

Unless otherwise ordered we furnish Stay Bolts in 3 ft. lengths.

STAYBOLT TAPS.



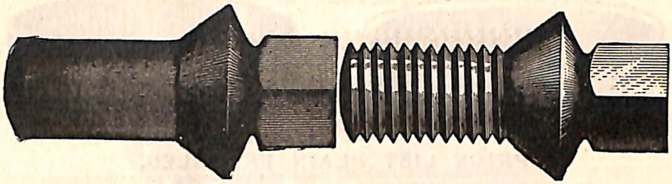
PRICE LIST.

Diameter in Inches.	Length in Inches.											
	16	18	21	24	27	30	33	36	39	42	48	54
¾-⅞	$5.60	$7.20	$8.00	$8.80	$10.90	$13.00	$14.00	$15.00	$16.50	$18.00	$19.00	$20.00
1-1	6.60	8.50	9.35	10.20	12.25	14.25	15.40	16.50	18.15	19.75	21.00	22.25
1 1/16-1 1/8	7.60	9.50	10.35	11.20	13.25	15.25	16.40	17.50	20.00	22.00	23.50	25.00
1 3/16-1 1/4	9.00	10.50	12.00	12.75	14.75	16.50	18.00	19.50	22.00	24.00	25.50	27.00
1 5/16-1 3/8	11.00	12.50	14.00	15.00	17.00	18.50	20.00	21.50	24.00	26.00	28.00	30.00
1 7/16-1 1/2	13.00	14.50	16.00	17.00	19.00	20.00	22.00	23.50	26.00	28.00	30.00	32.00

We carry Stay Bolt Taps in stock 12 threads to the inch.

When ordering Taps, state diameter and number of threads per inch, and also lengths of parts at A, B, C, D and E.

BOILER PATCH BOLTS.



THREADED—12 threads to an inch.

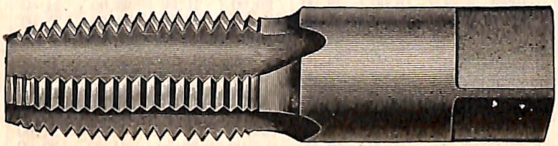
Price per 100.

Length of Patch Bolts	Diameter of Patch Bolts.					
	1-2	5-8	3-4	7-8	1	1 1-8
3-4	$3.75	$4.25	.....	.....	.....	.....
7-8	4.00	4.50	$6.00	.....	.....	.....
1	4.25	4.80	6.50	$9.50	$13.50	.....
1 1-8	4.50	5.10	6.80	9.85	14.00	$19.00
1 1-4	4.75	5.50	7.25	10.25	14.75	20.00
1 1-2	5.25	6.50	8.25	11.25	16.25	21.50
1 3-4	5.75	7.50	9.25	12.25	17.75	23.00
2	6.25	8.50	10.25	13.25	19.25	24.50
2 1-4	7.75	9.50	11.25	14.25	20.75	26.00
2 1-2	8.25	10.50	12.25	15.25	22.25	27.50
2 3-4	8.75	11.50	13.25	16.25	23.75	29.00
3	9.25	12.50	14.25	17.25	25.25	31.50
BLANK PATCH BOLTS	25 cts. lb. Lots of 25 lbs or over	20 cts. lb. Lots of 25 lbs or over	19 cts. lb. Lots of 25 lbs or over	18 cts. lb. Lots of 25 lbs or over	17 cts. lb. Lots of 25 lbs or over	.....

Above sizes carried in stock in Chicago.

The length of a Patch Bolt is the distance from top of countersink to end of bolt.

PATCH BOLT TAPS.



Dia. in Inches.	Threads per Inch.	PRICE.	Dia. in Inches.	Threads per Inch.	PRICE.
1-2	12	$ .70	13-16	12	$1.40
9-16	12	.80	7-8	12	1.60
5-8	12	.90	15-16	12	1.80
11-16	12	1.05	1	12	2.00
3-4	12	1.20			

These Taps are made especially for Boilermakers and are slightly tapered in order to make steam-tight joint.





PRICE LIST PLAIN FERRULES.

Table showing number in stock and price per 100.

Inside Dia. in Inches.	STOCK ON HAND.	Width, Inches.	Thickness of Copper. 1-32	3-64	1-16	5-64	3-32	7-64	1-8
1¼	.....	½	$ 6.00	$ 8.00	$10.00	$11.50	$13.00	$14.00	$15.00
	1000	⅝	6.50	8.50	10.50	12.00	13.50	14.50	15.50
1½	.....	½	6.50	8.50	10.50	12.00	13.50	14.50	15.50
	1000	⅝	7.00	9.00	11.00	12.50	14.00	15.00	16.00
1¾	.....	½	7.00	9.00	11.00	12.50	14.00	15.00	16.00
	9000	⅝	7.50	9.50	11.50	13.00	14.50	15.50	16.50
	.....	¾	8.00	10.00	12.00	13.50	15.00	16.00	17.00
1⅞	.....	½	7.50	9.50	11.50	13.00	14.50	15.50	16.50
	.....	⅝	8.00	10.00	12.00	13.50	15.00	16.00	17.00
	.....	¾	8.50	10.50	12.50	14.00	15.50	16.50	17.50
	.....	⅞	9.50	11.50	13.50	15.00	16.50	17.50	18.50
	.....	1	10.50	12.50	14.50	16.00	17.50	18.50	19.50
2	.....	½	8.00	10.00	12.00	13.50	15.00	16.00	17.00
	30000	⅝	8.50	10.50	12.50	14.00	15.50	16.50	17.50
	.....	¾	9.00	11.00	13.00	14.50	16.00	17.00	18.00
	.....	⅞	10.00	12.00	14.00	15.50	17.00	18.00	19.00
	.....	1	11.00	13.00	15.00	16.50	18.00	19.00	20.00
2¼	4800	⅝	10.50	12.50	14.50	16.00	17.50	18.50	19.50
	.....	¾	11.00	13.00	15.00	16.50	18.00	19.00	20.00
	.....	⅞	12.00	14.00	16.00	17.50	19.00	20.00	21.00
	.....	1	13.00	15.00	17.00	18.50	20.00	21.00	22.00
2½	12900	⅝	12.50	14.50	16.50	18.00	19.50	20.50	21.50
	.....	¾	13.00	15.00	17.00	18.50	20.00	21.00	22.00
	.....	13/16	13.50	.....	.....	.....	.....	.....	.....
	.....	⅞	14.00	16.00	18.00	19.50	21.00	22.00	23.00
	.....	1	15.00	17.00	19.00	20.50	22.00	23.00	24.00
3	10201	¾	16.00	18.00	20.00	21.50	23.00	24.00	25.00
	.....	⅞	17.00	19.00	21.00	22.50	24.00	25.00	26.00
	.....	1	18.00	20.00	22.00	23.50	25.00	26.00	27.00
3¼	.....	¾	19.00	21.00	23.00	24.50	26.00	27.00	28.00
	.....	⅞	20.00	22.00	24.00	25.50	27.00	28.00	29.00
	.....	1	21.00	23.00	25.00	26.50	28.00	29.00	30.00
3½	2250	¾	22.00	24.00	26.00	27.50	29.00	30.00	31.00
	.....	⅞	23.00	25.00	27.00	28.50	30.00	31.00	32.00
	.....	1	24.00	26.00	28.00	29.50	31.00	32.00	33.00
4	7500	¾	26.00	28.00	30.00	31.50	33.00	34.00	35.00
	.....	⅞	27.00	29.00	31.00	32.50	34.00	35.00	36.00
	.....	1	28.00	30.00	32.00	33.50	35.00	36.00	37.00
	.....	1¼	29.00	31.00	33.00	34.50	36.00	37.00	38.00
4½	1000	¾	30.00	32.00	36.00	38.50	42.00	45.00	46.00
	.....	⅞	31.00	34.00	38.00	40.50	44.00	46.00	47.00
	.....	1	33.00	36.00	40.00	42.50	46.00	47.00	48.00

Sizes shown as not on hand are being made and are daily expected from mill.

Flanged Ferrules $2.00 per hundred advance over above.

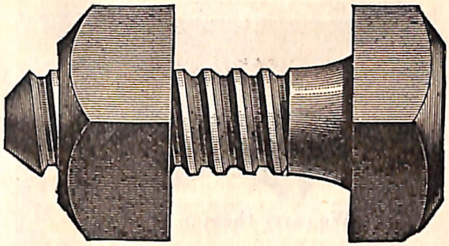
All Ferrules carried in stock are $\frac{1}{16}$ of an inch thick.

Flanged Ferrules or special sizes of Ferrules of either kind, of any width or thickness of copper desired, furnished promptly from mill.

All our Copper Ferrules are seamless and thoroughly annealed.

STEEL BOILER BOLTS.

With Cone Points and fitted with Patent Recessed Square Nuts.



The length of the bolt is the distance under the head.

These bolts are made of soft steel with quite coarse threads, so that the nuts can be run on or off quickly by hand, and are fitted with Patent Recessed Nuts, and will be found of great convenience to boiler-makers, being much better adapted for "fitting up bolts" than the ordinary machine bolt.

STOCK ON HAND.

Number of Kegs. (200 lbs.)	Size.	No. Bolts in 200 lbs.
15	1-2 x 1½	.....
25	" x 1¾	.....
16	5-8 x 1½	530
15	" x 1¾	500
25	" x 2	450
10	3-4 x 1½	300
11	" x 1¾	290
15	" x 2	270
5	7-8 x 2	200
4	" x 2½	180

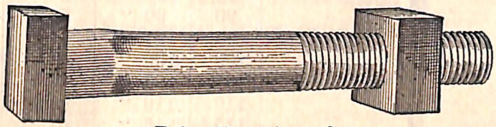
PRICE LIST

per hundred.

Length of Bolts.	Diameter of Bolts. 1-2	5-8	3-4	7-8
1½	$6.00	$9.00	$12.70	$18.80
2	6.35	9.55	13.45	19.80
2½	6.70	10.10	14.20	20.80
3	7.05	10.65	14.95	21.80
3½	7.40	11.20	15.70	22.80
4	7.75	11.75	16.45	23.80
4½	8.10	12.30	17.20	24.80
5	8.45	12.85	17.95	25.80

Sizes shown as not on hand are being made and are daily expected from mill.

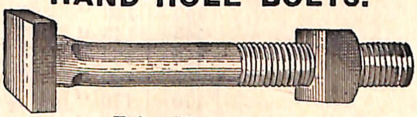
MAN-HOLE BOLTS.



Price 25 cents each.

We can furnish above in any size or quantity desired.

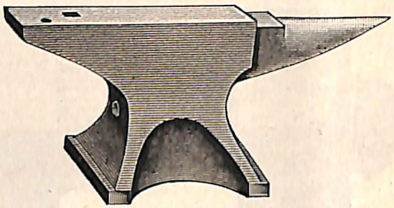
HAND-HOLE BOLTS.



Price 15 cents each.

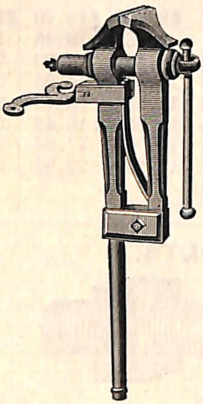
We can furnish above in any size or quantity desired.

ANVILS.



We carry these in all sizes.

SOLID BOX VISES.

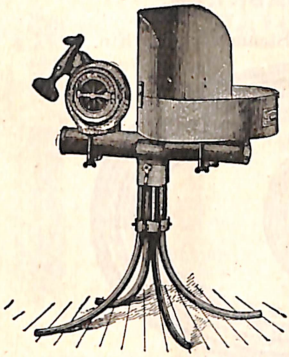


PRICE LIST.

Adopted by Manufacturers
March 17, 1887.

No.	Approx. Weight	Jaw	PRICE.
25	25 lbs.	3½ in.	$12.00
30	30 "	3½ "	11.00
35	35 "	3¾ "	10.00
40	40 "	3¾ "	10.50
45	45 "	4 "	11.00
50	50 "	4¼ "	11.50
55	55 "	4⅜ "	12.00
60	60 "	5¼ "	13.00
65	65 "	4¾ "	14.00
70	70 "	5¼ "	15.00
75	75 "	5½ "	16.00
80	80 "	5¾ "	17.50
85	85 "	6 "	18.50
90	90 "	5¾ "	20.00
95	95 "	6 "	21.00
100	100 "	6¼ "	22.00
105	105 "	6¼ "	23.00
110	110 "	6¼ "	24.00
115	115 "	6½ "	25.00
120	120 "	6½ "	26.00
125	125 "	6½ "	27.50
130	130 "	6½ "	29.00
135	135 "	6½ "	31.50
140	140 "	7 "	33.00
145	145 "	.....	35.00
150	150 "	6⅞ "	36.00
160	160 "	7⅛ "	41.50
170	170 "	7½ "	44.50
180	180 "	.....	47.00
190	190 "	.....	53 00
200	200 "	8 "	56.00

CUMMING PORTABLE RIVET FORGES.



The chief advantages of these forges are their lightness, strength, portability and strong blast. They can be easily taken apart (heaviest piece weighing 28 lbs. and largest being 18″ dia.) and carried into such places as fire-room of a steamship, down a mine, top of standpipes or bridges, or packed in a small bundle and carried in the hand or on muleback over mountain roads. They neither have chains, leather belts, bellows or anything breakable or affected by the weather, and are the easiest working forges made.

List Price, No. A. $35.00.

STAR BELLOWS FORGES.

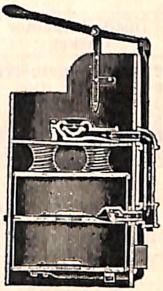
SIZE No. 40.



The bellows on these forges are protected by a sheet steel drum and by a check valve from the gas.

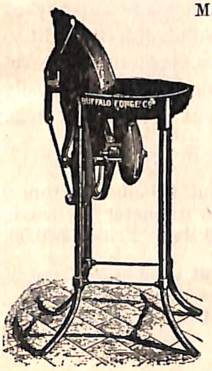
Hearth, 19 in. dia.
Height, 30 in. dia.
Weight, 100 lbs.

List Price, $40.00.



BUFFALO FORGES.

Made in any style or size desired.



TABLE

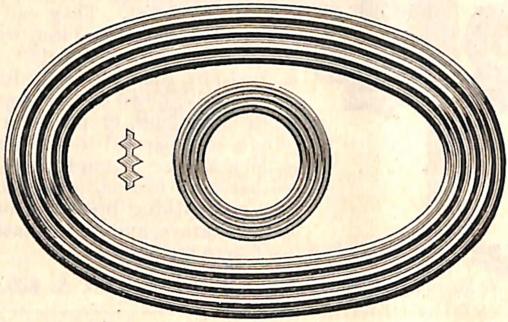
Showing measurements and price list.

Size.	Description.				List Price.
	Height	Hearth.	Fan.	Weight.	
No. 0	30 in.	28 x 40 in.	14 in. dia.	250 lbs.	$50.00
" 1	29 "	21 x 27 "	10 " "	140 "	40.00
" 2	29 "	21 x 27 "	10 " "	150 "	42.00
" 3	29 "	21 x 27 "	10 " "	140 "	36.00
" 4	33 "	18 in. dia.	.....	75 "	27.00
" 5	33 "	18 " "	.....	60 "	24.00
" 6	33 "	18 " "	.....	80 "	30.00
" 7	15 "	15 " "	6 " "	50 "	16.00
" 8	15 "	15 " "	6 " "	50 "	18 00
" 9	15 "	15 " "	6 " "	50 "	20 00
" 10	.....	.....	.....	.....	32 00
" 11	33 "	18 " "	.....	60 "	26.00
" 12	.....	.....	.....	125 "	32.00

Catalogue furnished on application.

IDEAL LEAD GASKETS.

For Man-Holes, Hand-Holes, Steam Drums, Etc.



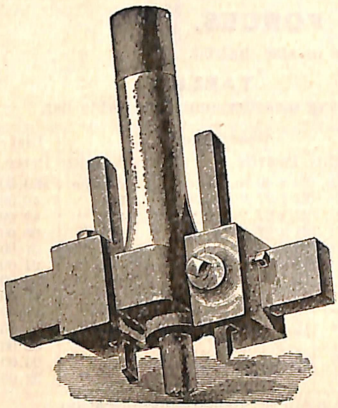
PRICE LIST ROUND GASKETS.

Inside Diameter Gasket.	Price.	Inside Diameter Gasket.	Price.	Inside Diameter Gasket.	Price.
2 to 2½ in. inclusive	$ .10	8 to 8½ in. incl'ive	$ .40	14 to 14½ in. incl'ive	$1.00
3 " 3½ " "	.10	9 " 9½ " "	.45	15 " 15½ " "	1.15
4 " 4½ " "	.15	10 " 10½ " "	.50	16 " 16½ " "	1.25
5 " 5½ " "	.20	11 " 11½ " "	.60	17 " 17½ " "	1.40
6 " 6½ " "	.25	12 " 12½ " "	.75	18 " 18½ " "	1.50
7 " 7½ " "	.35	13 " 13½ " "	.85		

Special Gaskets furnished when desired.

To ascertain price of Oval Gaskets for Man-Holes and Hand-Holes, add together length and breadth of hole and divide product by 2, which will give diameter in round form. Then refer to list for price.

ADJUSTABLE FLUE-HOLE CUTTER.



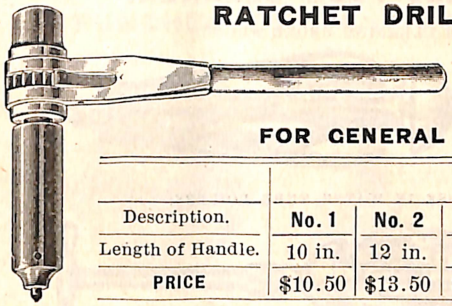
This tool is made entirely of steel with shank left straight so that it can be fitted to the socket of any machine and is very easily adjusted to cut any size flue hole.

It is made in two sizes:

No. 1 will cut tube holes from 2 to 4 inches diameter inclusive. Weight 12 lbs. Price, $20.00.

No. 2 will cut tube holes from 2½ to 6 inches diameter inclusive. Weight 14 lbs. Price, $25.00.

RATCHET DRILLS.

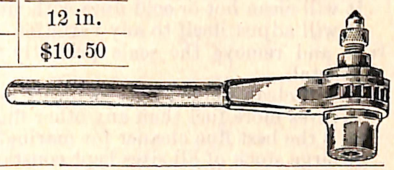


FOR GENERAL USE.

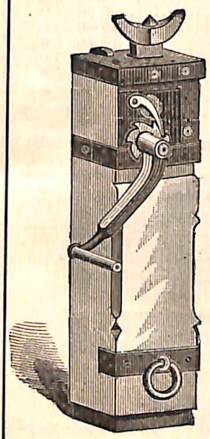
Description.	Size. No. 1	No. 2	No. 3	No. 4	No. 5
Length of Handle.	10 in.	12 in.	16 in.	18 in.	24 in.
PRICE	$10.50	$13.50	$16.00	$19.00	$23.00

FOR BOILERMAKERS' USE.

Description.	Size. No. 1	No. 2
Length of Handle.	10 in.	12 in.
PRICE	$9.00	$10.50



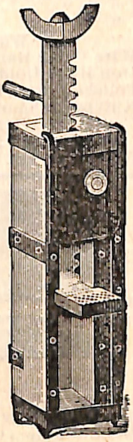
STONE JACKS.



Stone Jacks,	2	tons.....	$	45.00
" "	3	"		49.00
" "	4	"		53.00
" "	5	"		58.00
" "	6	"		65.00
" "	7	"		75.00
" "	8	"		85.00
" "	10	"		100.00

DOUBLE GEAR.

Stone Jacks,	6	tons.....	$	76.00
" "	8	"		90.00
" "	10	"		115.00
" "	12	"		130.00
" "	15	"		150.00
" "	20	"		175.00
" "	25	"		200.00

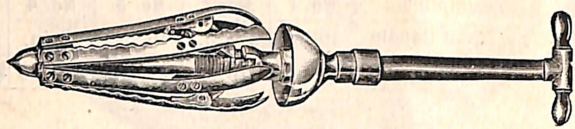


RUGGLES FLUE CLEANER.

FOR CLEANING SMOKE FLUES.



FOR USE IN WATER TUBE BOILERS.



The Ruggles Flue Cleaner is superior to all others in following respects:

It is the only flue cleaner made that can be operated by a flexible handle, thus permitting it to be used in small fire rooms or where space is limited and where it is not possible to use other flue cleaners.

It will clean hot or cold flues without changing temper.

It will adjust itself to any variation in the diameter of the same tube and remove the scale perfectly from all tubes without cutting the metal.

It will clean welded flues as nicely as new ones.

It saves more fuel than any other flue cleaner in existence.

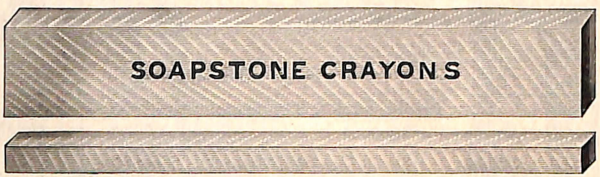
It is the best flue cleaner for marine boilers.

A large stock of all sizes kept constantly on hand.

PRICE LIST.

For cleaning Smoke Flues, 1½ to 3½ in. dia. inc	$ 5.00	each
" " " " 4 " "	7.00	"
" " " " 4½ to 5 " inc	10.00	"
" " Water Tubes, all sizes	15.00	"
Wire Cable Handle with fittings	3.00	"
Iron Hand Hold for operating Flue Cleaner	.50	"
Polished Brass Hand Hold	.75	"
Knives for Smoke Flue Cleaner	2.00	pr.set
" " Water Tube "	4.00	"

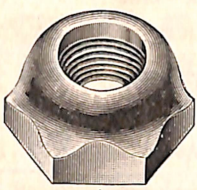
Our Flexible Handle, made of ⅞ Galvanized Steel Wire, is made especially for marine use, or where space is limited.



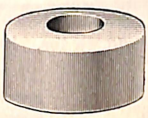
PRICE LIST.

Square Crayons	Price, $ .01½	per lb.	
Metal Workers Crayons, 5x½x$\frac{3}{16}$	" 2.50	" gross	(case lots)
Railroad " 5x½x½	" 4.00	" "	(" ")
Rolling Mill " 5x1¼x$\frac{3}{16}$	" .10	per lb.	

PUNCHES, DIES AND COUPLINGS.







PRICE LIST

PUNCHES AND COUPLINGS.

Diameter of Rivet.	Length of Punch. (Center point not included.)	LIST PRICE.	
		Punch.	Coupling.
$\frac{1}{8}$ to $\frac{3}{8}$ in. inc.	$1\frac{1}{4}$ inches.	$0.38	$1.00
$\frac{1}{4}$ " $\frac{9}{16}$ " "	$1\frac{1}{2}$ "	.50	1.25
$\frac{7}{16}$ " $\frac{5}{8}$ " "	$1\frac{1}{2}$ "	.75	1.50
$\frac{9}{16}$ " 1 " "	$1\frac{15}{16}$ "	1.08	1.75
$\frac{3}{4}$ " $1\frac{3}{16}$ " "	$2\frac{3}{8}$ "	1.50	2.00
1 " $1\frac{1}{2}$ " "	$2\frac{11}{16}$ "	2.00	2.50
$1\frac{1}{4}$ " $1\frac{3}{4}$ " "	3 "	3.00	3.25
$1\frac{1}{2}$ " $2\frac{1}{4}$ " "	3 "	5.00	4.00
2 " $2\frac{5}{8}$ " "	3 "	6.50	4.75

PRICE LIST OF DIES.

For Diameter of Rivet.	Outside Diam.	LIST PRICE.
$\frac{5}{8}$ in. diam. and less.	$1\frac{1}{2}$ inches.	$1.25
$1\frac{1}{16}$ " " to $1\frac{1}{16}$ inc.	2 "	2.00
$1\frac{1}{4}$ " " " $1\frac{7}{8}$ "	$2\frac{15}{16}$ "	6.50

The above are all made especially for us of high grade tool steel and are the best that can be furnished.

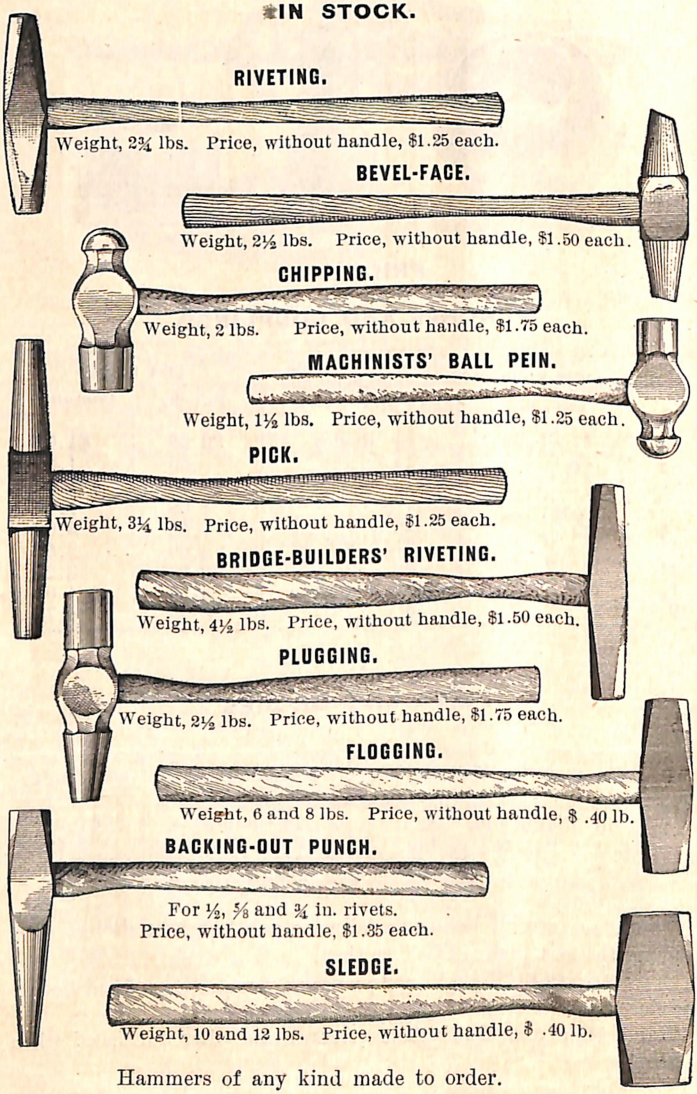
Special sizes of Round or Square punches and dies furnished at special prices.

Hand Hole and Tube Hole punches and dies furnished when desired.

BOILERMAKERS' HAMMERS.

Forged especially for the trade from high grade Tool Steel.

IN STOCK.



RIVETING.

Weight, 2¾ lbs. Price, without handle, $1.25 each.

BEVEL-FACE.

Weight, 2½ lbs. Price, without handle, $1.50 each.

CHIPPING.

Weight, 2 lbs. Price, without handle, $1.75 each.

MACHINISTS' BALL PEIN.

Weight, 1½ lbs. Price, without handle, $1.25 each.

PICK.

Weight, 3¼ lbs. Price, without handle, $1.25 each.

BRIDGE-BUILDERS' RIVETING.

Weight, 4½ lbs. Price, without handle, $1.50 each.

PLUGGING.

Weight, 2½ lbs. Price, without handle, $1.75 each.

FLOGGING.

Weight, 6 and 8 lbs. Price, without handle, $ .40 lb.

BACKING-OUT PUNCH.

For ½, ⅝ and ¾ in. rivets.
Price, without handle, $1.35 each.

SLEDGE.

Weight, 10 and 12 lbs. Price, without handle, $ .40 lb.

Hammers of any kind made to order.

BOILERMAKERS' TOOLS.

Forged especially for the trade from high grade Tool Steel.

IN STOCK.

RIVET SETS.



Any Size.

Price, $1.50 each.

CAULKING TOOLS.



Price, $ .50 each.

BEADING TOOLS.



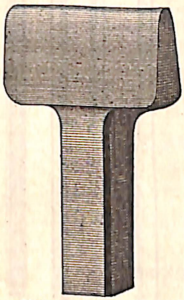
Price, $ .75 each.

FULLERS.



Price, $2.50 each.

BOTTOM FULLERS.



Price, $2.50 each.

COLD CHISELS.



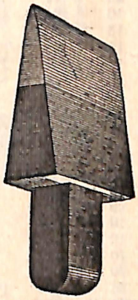
Price, $1.00 each.

SIDE SETS.



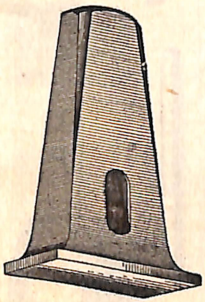
Price, $1.00 each.

HARDIES.



Price, $1.25 each.

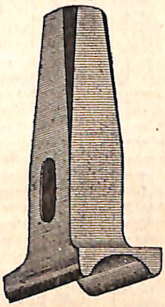
FLATTERS.



Price, $1.75 each.

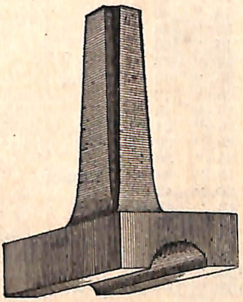
SWAGES.

Top.



Made any size desired.

Bottom.



Price, $ .40 lb.

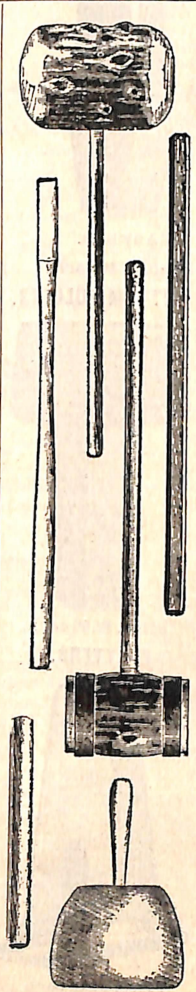
HAMMER HANDLES AND MAULS.

Made of second growth hickory.

The Hammer Handles and Mauls we carry in stock are made for us by **NICHOLAS GEISEN,** the well known manufacturer of Crown Point, Ind., who has had forty years' experience in the business, and each handle advertised is made expressly by him for the particular purpose for which it is sold.
We can furnish Special Handles of any size or shape desired.

Sizes shown as not on hand are being made and are daily expected from mill.

No. in STOCK	Description.	Price per doz. Turned	Shaved
10 doz.	10 in. Hammer Handles.....	$ .75	.....
10 "	11 " " "	.75	.....
10 "	12 " Chipping "	.90	.....
25 "	12 " " " heavy..	.90	.....
10 "	13 " " "	.90	.....
20 "	14 " " "	1.00	.....
20 "	15 " " "	1.00	$1.25
20 "	16 " " "	1.10	1.25
20 "	16 " Machinists "	1.10	1.25
20 "	18 " Riveting "	1.10	1.35
20 "	18 " Machinists "	1.10	1.35
20 "	18 " Blacksmiths' " ..	1.10	1.35
15 "	20 " Riveting "	1.15	1.35
10 "	20 " Blacksmiths' "	1.15	1.35
20 "	22 " Riveting "	1.30	1.40
10 "	22 " Blacksmiths' "	1.30	1.40
25 "	24 " Riveting "	1.30	1.50
10 "	24 " Blacksmiths' "	1.30	1.50
15 "	26 " " "	1.40	1.60
15 "	28 " " "	1.50	1.75
10 "	28 " Pointer "	1.50	.....
10 "	28 " Sledge "	1.50	1.75
20 "	30 " " " light...	1.65	2.00
30 "	30 " " " med....	1.65	2.00
35 "	30 " " " heavy..	1.65	2.00
20 "	32 " " "	2.00	.....
25 "	36 " " " light...	2.25	2.50
30 "	36 " " " med....	2.25	2.50
40 "	36 " " " heavy.	2.25	2.50
25 "	36 " " " ex. hvy.	2.25	.....
10 "	42 " " " light...	2.50	.....
10 "	42 " " " med....	2.50	.....
10 "	42 " " " heavy..	2.50	.....
20 "	48 " " "	3.50	.....
25 "	16 " Tool "	.40	.....
20 "	18 " " "	.50	.....
25 "	24 " " "	.60	.....
15 "	30 " " "	.75	1.25
10 "	36 " " "	.85	1.35
13 "	40 " " "	2.00	.....
12 "	48 " " "	2.50	.....
10 "	60 " " "	3.00	.....
12 "	72 " " "	3.50	.....
25 "	10 " Mallet "	.60	.....
25 "	12 " " "	.75	.....
25 "	18 " " "	1.20	.....
25 "	24 " " "	1.40	.....
25 "	30 " Maul "	1.60	.....
25 "	36 " " "	2 00	.....
15 "	38 " Rammer "	2.50	.....
20 "	42 " " "	3.00	.....
10 "	48 " " "	3.50	.....
12 "	60 " Hoe "	3.50	.....
20 "	96 " Holding-on Poles	3.00	.....
13 "	36 " Turning Bats.....	3.00	.....
100 "	Bench Rammers.....	.75 pair	
100 "	Foundry Wedges.....	1.50 per 100	



HAMMER HANDLES—Continued.

FOR

BOILER AND MACHINE SHOPS,
FOUNDRIES AND CAR WHEEL WORKS,
BRIDGE AND IRON WORKS,
BRASS AND COPPER WORKS,
FORGE, LOCOMOTIVE AND CAR WORKS,
ROLLING MILLS,
MALLEABLE IRON WORKS.

We can furnish Special Handles of any size or shape desired.

MALLETS AND MAULS.

No. in STOCK								
50 only	2	in. dia.	x	4	in.	long.....	$2.00	per doz.
20 "	2½	" "	x	5	"	"	2.25	"
40 "	3	" "	x	6	"	"	2.50	"
60 "	3½	" "	x	5	"	"	2.75	"
30 "	3½	" "	x	7	"	"	.30	each
25 "	4	" "	x	8	"	"	.40	"
30 "	4½	" "	x	9	"	"	.50	"
25 "	5	" "	x	10	"	"	.70	"
30 "	6	" "	x	10	"	"	.75	"
25 "	6	" "	x	12	"	"	.75	"
40 "	7	" "	x	11	"	"	.75	"
45 "	8	" "	x	12	"	"	.85	"
50 "	9	" "	x	12	"	"	1.00	"



STONE AND MARBLE CUTTERS.

No. in STOCK	Description.	Price per doz. Turned	Shaved
10 doz.	9 in. Brick Hammer Handles	$ .40	.....
20 "	10 " " " "	.50	.....
30 "	12 " " " "	.60	.....
35 "	16 " Stonemasons' "	.70	.....
10 "	18 " " "	.75	.....
10 "	20 " " "	.85	.....
11 "	24 " " "	1.00	.....
12 "	28 " Sledge "	1.65	.....
10 "	30 " " "	1.75	.....
10 "	36 " " "	2.25	.....



LIME AND STONE WORKS.

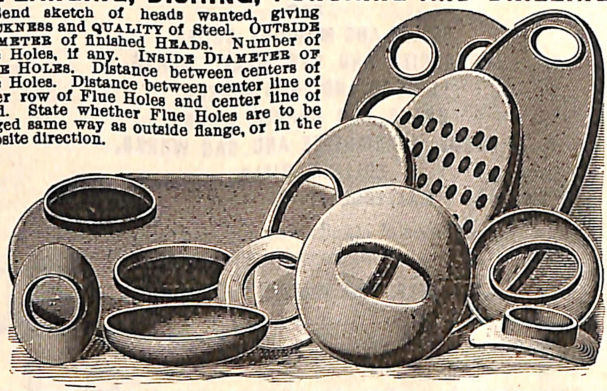
No. in STOCK	Description.	Price per doz. Turned	Shaved
10 doz.	22 in. Blacksmiths' Handles..	$1.30	.....
10 "	24 " " " ..	1.40	.....
20 "	28 " Sledge " ..	1.60	.....
30 "	30 " " " ..	1.75	$2.00
20 "	36 " " " light	2.25	2.50
15 "	36 " " " med.	2.25	2.50
10 "	36 " " " heavy	2.25	2.50
5 "	Pick Handles, light.....	2.50	.....
5 "	" " medium.	2.75	.....
5 "	" " heavy.....	3.00	.....



PRICE LIST.

FLANGING, DISHING, PUNCHING AND DRILLING.

Send sketch of heads wanted, giving THICKNESS and QUALITY of Steel. OUTSIDE DIAMETER of finished HEADS. Number of Flue Holes, if any. INSIDE DIAMETER OF FLUE HOLES. Distance between centers of Flue Holes. Distance between center line of upper row of Flue Holes and center line of Head. State whether Flue Holes are to be flanged same way as outside flange, or in the opposite direction.



PRICE OF FLANGING HEADS.

Outside Dia. after being flanged.	Thickness of Heads. From No 12 Gauge to 5/16 inch. inclusive.	7-16 to 1/2 inclusive.	9-16 to 5/8 inclusive.
12 to 20 in.	$ .75	$ .85	$ 1.00
21 " 25 "	.75	.90	1.20
26 " 35 "	1.00	1.10	1.20
36 " 40 "	1.20	1.40	1.50
41 " 45 "	1.50	1.70	1.90
46 " 50 "	2.00	2.20	2.40
51 " 55 "	2.50	2.75	3.00
56 " 60 "	3.00	3.50	4.00
61 " 65 "	3.50	4.25	5.00
66 " 72 "	4.00	5.25	6.00
73 " 78 "	4.75	6.00	7.00
79 " 84 "	5.75	7.00	8.00
85 " 90 "	6.75	8.00	9.00
91 " 96 "	12.00	15.00	20.00

Heads heavy as 3-4-inch thick can be machine-flanged in Chicago. Special prices for flanging heads heavier than 5-8-inch thick.

PRICES FOR DISHING HEADS.

Heads up to 48 inches diameter inclusive, same price as flanging; Heads from 49 to 60 inches diameter inclusive, 1¼ times price of flanging; Heads over 60 inches diameter, double the price of flanging.

PRICE OF FLANGING FLUE HOLES.

Inside Diameter.	5-16 to 3/8	7-16 to 1/2	9-16 to 5/8
6 to 9 in.	$1.25	$1.50	$1.90
10 " 17 "	1.40	1.60	2.10
18 " 19 "	1.75	2.00	2.60
20 " 24 "	2.00	2.25	3.25
25 " 29 "	2.25	2.50	3.50
30 " 34 "	2.50	2.75	3.50
35 " 39 "	2.75	3.00	3.75
40 " 44 "	3.00	3.25	4.00
45 " 50 "	3.25	3.50	4.25

PRICE OF PUNCHING FLUE HOLES.

Dia. of hole in inches.	Thickness of Plate. 1/4 to 5-16	3/8 to 1/2	9-16 to 5/8
	Each.	Each.	Each.
2 to 2½ in.	4 cts.	5 cts.	8 cts.
2⅝ " 3 "	5 "	6 "	8 "
3⅛ " 3½ "	6 "	7 "	9 "
3⅝ " 4 "	7 "	8 "	9 "
4⅛	7½ "	8½ "	10 "

PRICE OF DRILLING FLUE HOLES.

Dia. of hole in inches.	Thickness of Plate. 1/4 to 5-16	3/8 to 1/2	9-16 to 5/8
	Each.	Each.	Each.
1¾ to 2 in.	6 cts.	6 cts.	7 cts.
2¼ " 2⅝ "	7 "	7 "	7 "
2¾ " 3 "	8 "	8 "	8 "
3⅛ " 3½ "	11 "	11 "	11 "
3⅝ " 4 "	13½ "	13½ "	13½ "
4⅛	15 "	15 "	15 "

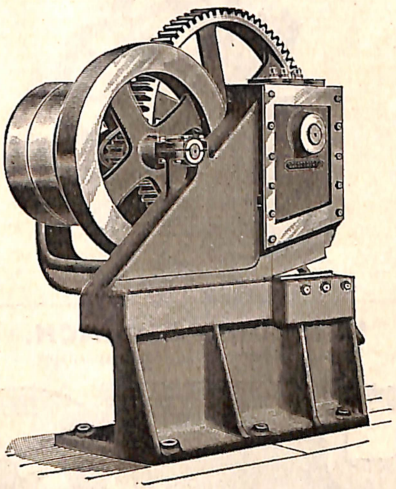
Large Plates for Bottoms of Boilers.

On application we are prepared to furnish prices for Rolling, Punching, Scarfing, and Beveling Bottom Plates for boilers, in one sheet, for any diameter from 44 to 72 inches, not exceeding eighteen feet in length.

TO THE TRADE.

We call your attention to the following pages, on which we show illustrations of the machinery we handle, which will be found especially applicable for all uses in Boiler Shops, Machine Shops, Foundries, Architectural Iron Works, Railroads, Bridge Works, Ship Yards, etc.

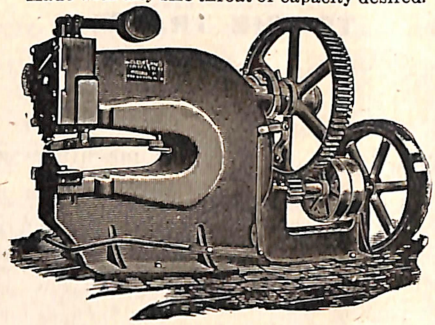
SPLITTING SHEARS.



SEND FOR ILLUSTRATED CATALOGUE.

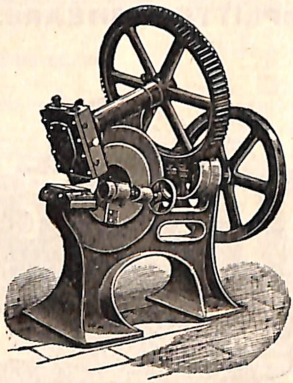
SINGLE PUNCH OR SHEAR.

Made with any size throat or capacity desired.



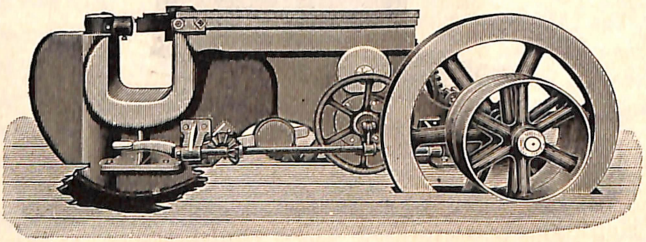
BEVEL SHEARS.

Made in two sizes.



HORIZONTAL PUNCH.

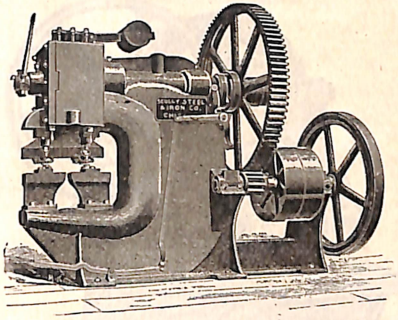
Made in different sizes and capacities.



SEND FOR ILLUSTRATED CATALOGUE.

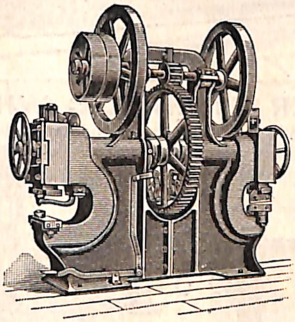
BEAM PUNCH AND COPING MACHINE.

Made in different sizes and capacities.



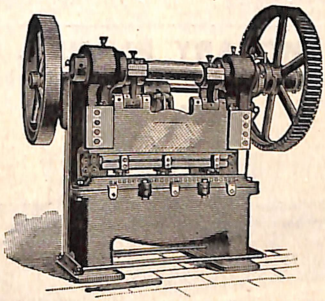
DOUBLE PUNCH AND SHEARS.

Made with any size throat or capacity desired.



MULTIPLE PUNCH.

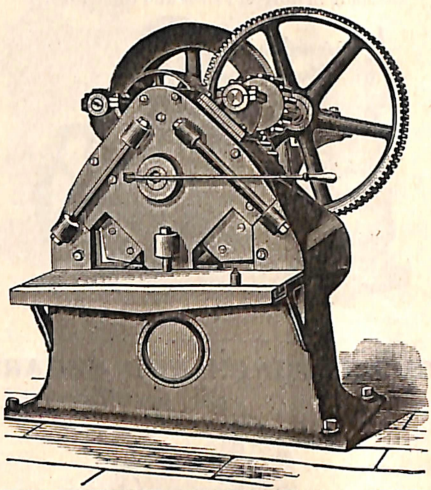
Made in different styles, sizes and capacities.



SEND FOR ILLUSTRATED CATALOGUE.

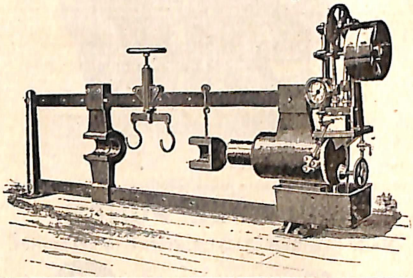
ANGLE SHEARS.

Made in any style or capacity desired.



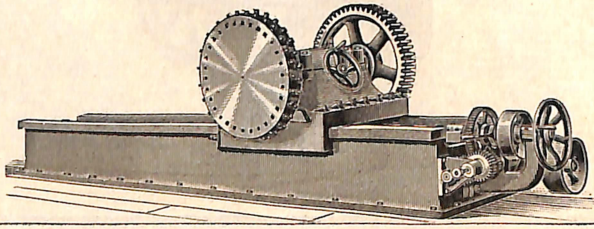
BELT POWER HYDRAULIC WHEEL PRESS.

Made in different sizes and capacities.



ROTARY PLANER.

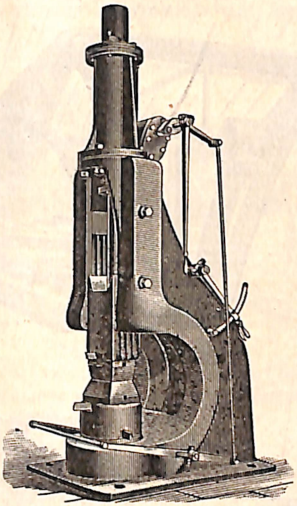
Made in different sizes with one or two heads.



SEND FOR ILLUSTRATED CATALOGUE.

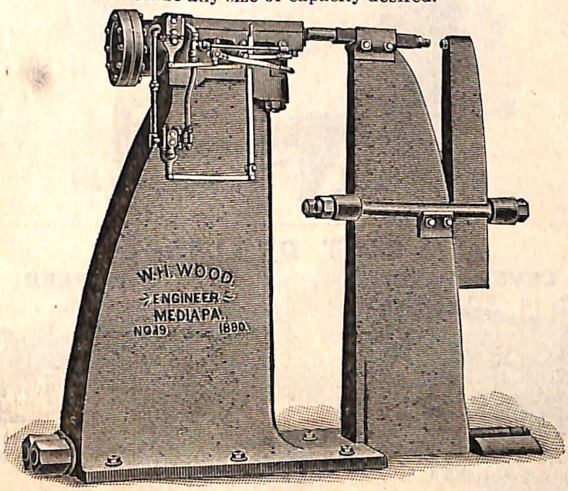
STEAM HAMMER.

Made in different sizes.



HYDRAULIC RIVETER.

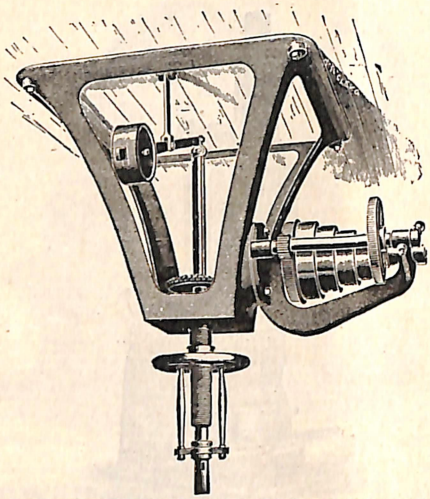
Made any size or capacity desired.



SEND FOR ILLUSTRATED CATALOGUE.

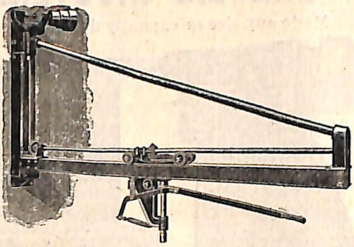
SUSPENSION DRILL.

Made with or without back gears.



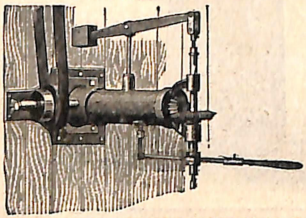
RADIAL DRILL.

Made with 12 and 15 foot arms.

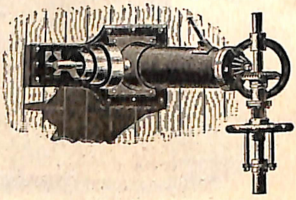


POST DRILLS.

LEVER FEED.



SCREW FEED.

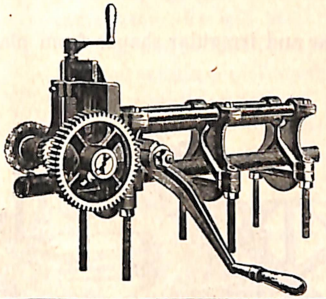


SEND FOR ILLUSTRATED CATALOGUE.

PORTABLE KEYSEATER.

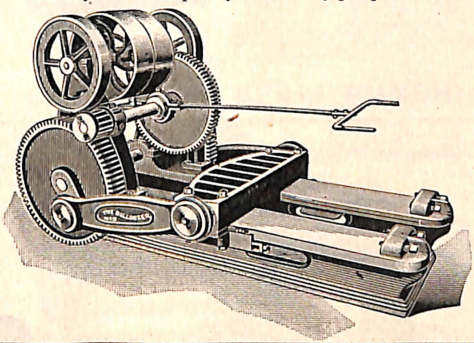
Made in two sizes.

Will mill Keyseats in the center or on the end of shafting from 1¼ to 5 inches in diameter without removing it from its hanger boxes.

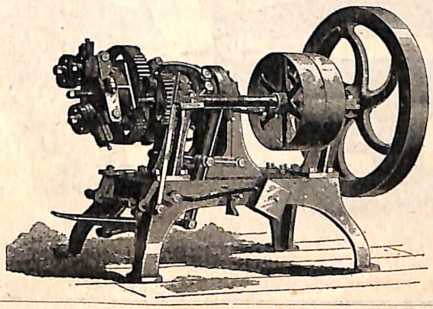


BULLDOZER.

For bending and forming all kinds of material.
Made in any size or capacity or for any purpose desired.



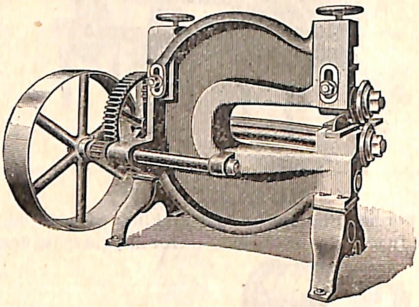
FLUE WELDING MACHINE.



SEND FOR ILLUSTRATED CATALOGUE.

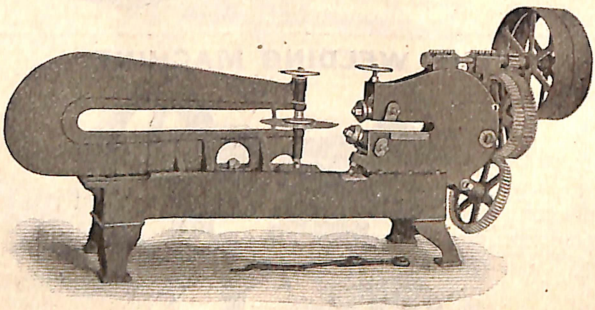
ROTARY SHEARS.

For cutting regular and irregular shapes from plate and sheet steel.



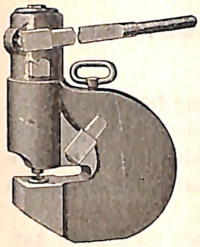
CIRCULAR SHEARS.

For inside and outside cuts.



SEND FOR ILLUSTRATED CATALOGUE.

HYDRAULIC PUNCH.



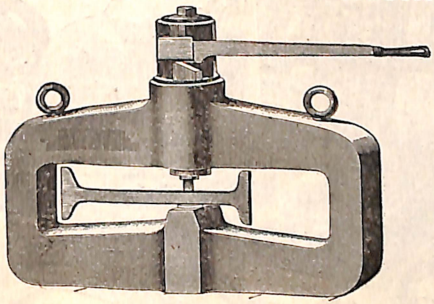
This punch is a great improvement on the old style, and will do double the work in the same time. It will keep in repair four times as long, and is much more easily packed. It is fitted with a pinion meshing into a rack cut on the ram to withdraw punch from metal after punching, which has overcome a great objection to this style of tool.

PRICE LIST.

No.	Thickness.	Rivet.	Throat.	Weight.	PRICE.	Throat.	PRICE.
0	¼ in.	⅝ dia.	2 in.	40 lbs.	$ 70.00	3½ in.	$ 80.00
1	⅜ "	⅝ "	2 "	50 "	80.00	3½ "	90.00
2	½ "	⅝ "	2 "	60 "	100.00	3½ "	110.00
3	½ "	¾ "	2 "	70 "	120.00	3½ "	130.00
4	⅝ "	¾ "	2 "	90 "	150.00	3½ "	170.00
5	¾ "	⅞ "	2 "	120 "	200.00	3½ "	220.00
7	1 "	1 "	2 "	280 "	250.00	4 "	275.00

Special sizes made to order.

HYDRAULIC BEAM PUNCH.



PRICE LIST.

No.	Beam.	Thickness.	Rivet.	Distance from center of punch to side.	Weight.	PRICE.
1	12 in.	½ in.	¾ in.	9¼	450 lbs.	$225.00
2	15 "	1 "	1 "	12¼	575 "	275.00
3	20 "	1 "	1 "	17¼	750 "	325.00

These Punches are made from a solid steel forging without weld and are operated the same as the Hydraulic Punch.

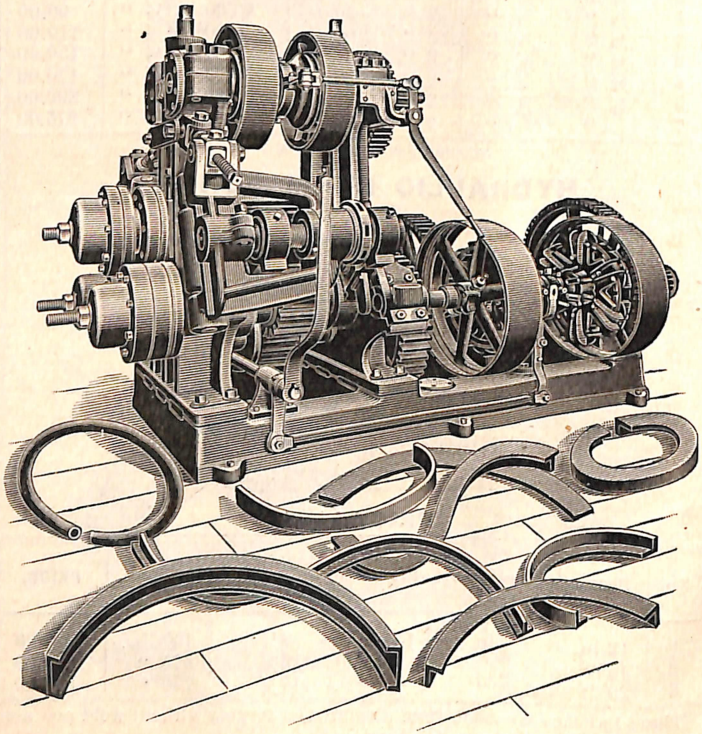
In Nos. 2 and 3 the ram returns itself when the socket is hard down on the lug, and in No. 1 by means of a rack cut on the ram and a pinion meshing into it as on other punch.

ANGLE BENDING ROLLS.

This machine has been designed to meet a long felt want in the iron working line, and as a labor saving tool is one of the greatest successes of the age. It does away with the old, laborious, expensive way of heating material and then bending it by hand, for by its use it is possible to **BEND COLD** the following:

Angles, Tees, Pipe, Small Channels, and Bar Iron on edge or flat.

Detailed information furnished upon application.



PATENT PLATE BENDING ROLLS.

Made any length or capacity desired.

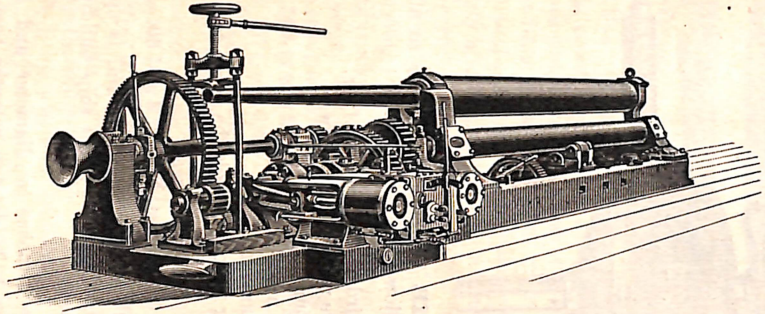
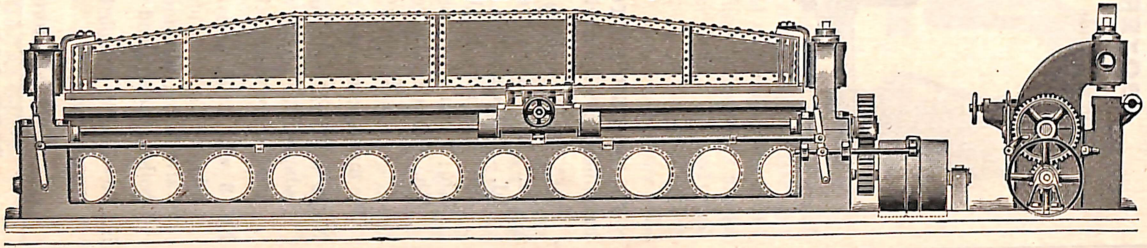


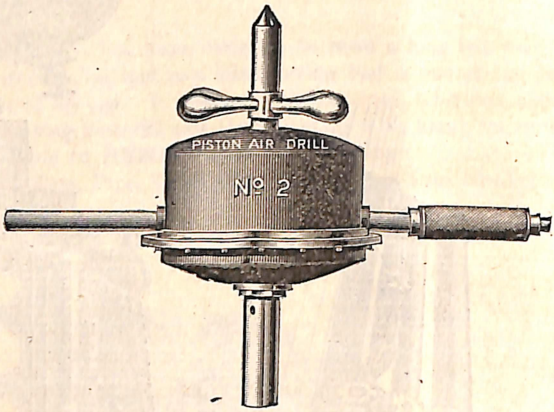
PLATE PLANER.

Made in different lengths.



BOYER PISTON AIR DRILL.

For all kinds of Drilling, Tapping and Reaming.



The **BOYER PISTON AIR DRILL** is superior to all other machines for reasons given below:

1st. It only requires one-third of the amount of air.
2d. It furnishes twenty-five per cent more power.
3d. It is absolutely free from vibration.
4th. It is more durable and needs no repairs.
5th. It can be operated by one man.
6th. It has a valve regulator which controls the speed to suit the different work.

We manufacture this drill in three sizes, Nos. 2, 3 and 60.

No. 2 will drill holes up to 3 inches in diameter and is specially adapted for heavy work, such as bridge and ship building and general architectural iron work.

No. 3 will drill holes up to 2 inches in diameter and is also adapted for screwing in stay bolts, driving cylinder boring bar, valve facing machines, rolling boiler flues, and general work in boiler, machine and railroad shops.

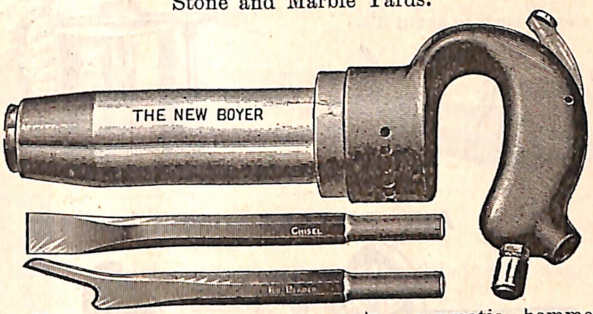
No. 60 will drill 4 inch holes in timber, and is made especially for wood work.

Detailed information furnished upon application.

SEND FOR ILLUSTRATED CATALOGUE.

BOYER AIR HAMMER.

For Boiler-Shops, Foundries, Iron Works of all kinds, Stone and Marble Yards.



The New Boyer is to-day the only pneumatic hammer of sufficient power to chip iron and steel, drive rivets, calk boilers and bead flues which does not cause such *shock* and *strain* upon the workmen handling it as to do them injury. Pneumatic hammers are as old as dental pluggers, steam hammers or rock drills. Anybody and everybody is at liberty to manufacture pneumatic hammers of either valve or valveless patterns, and the market is filled with many tools of both styles, but the *vibration* of them is so great that any workman running them for a short time *might become injured* from the constant shock.

The points which all purchasers of pneumatic tools should carefully investigate are: **THE POWER AND ECONOMY OF THE HAMMER AND ITS FREEDOM FROM VIBRATION.** We will be very glad at all times to send our New Boyer Hammer on ten days' trial, subject to approval, and if it does not prove entirely satisfactory and free from vibration, and superior in every respect to all other tools, you may return the same to us at our expense.

The New Boyer Hammer is made in sizes suitable for each separate business using them. For Boiler-Shops and Iron Works of all kinds we make the following sizes:

No. 000. For driving rivets up to 1 inch in diameter.
No. 0. For driving rivets up to ¾ inch diameter.
No. 1. For heavy chipping and calking.
No. 2. For general boiler work, such as chipping and calking.
No. 3. For calking and beading flues.

Special sizes for Stone and Marble Work.

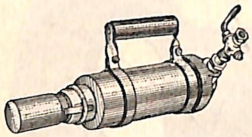
We furnish free with last four sizes, four blank chisels and ten feet air hose, and guarantee hammer one year against repairs.

Detailed information furnished on application.

SEND FOR ILLUSTRATED CATALOGUE.

AIR HOLDING-ON BAR.

Can be made to fit any dia.

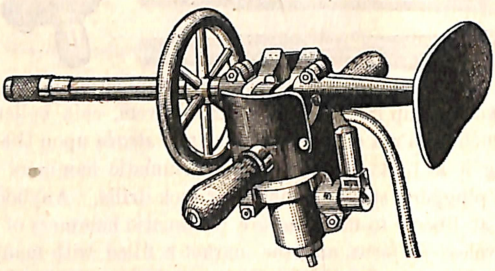


AIR PAINTER.

For whitewashing and painting.

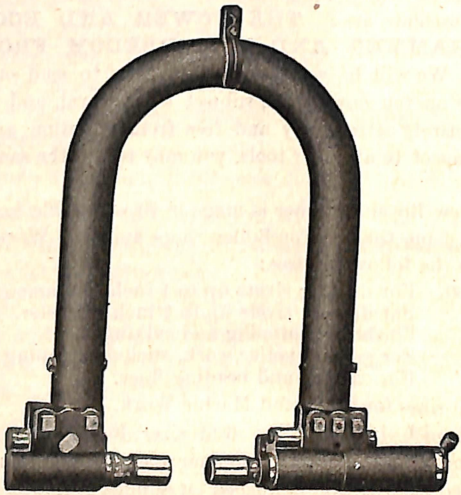


AIR BREAST DRILL.



AIR RIVETER.

For driving rivets up to 1½ in. dia. Applied to any size of frame.

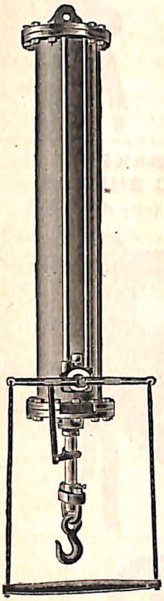


SEND FOR ILLUSTRATED CATALOGUE.

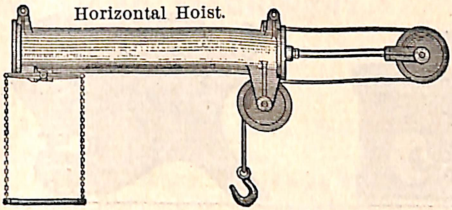
AIR HOISTS.

We can furnish these in any size, capacity or style desired.

Vertical Hoist.



Horizontal Hoist.



Our "Type A" Hoist is fitted with the most modern improvements, consisting of

An Adjustable Speed Valve with Safety Check and Self-Oiling Device.

An Automatic Shut-Off closing the valve at top of stroke and saving air.

A Patent Exhaust Attachment preventing the dust of the shop or surrounding atmosphere from entering the cylinder.

A Safety Cushion for piston; Swiveled and Swinging Hooks, and a specially constructed deep piston.

"Type B" Hoist is made for rough work where automatic governing of the load or speed is not essential. It is made in the same sizes as the "Type A" Hoist, the cylinder being made of drawn tubing or cast iron accurately bored, and is fitted with a plain valve and hook, whilst the improvements of the "Type A" Hoist are omitted.

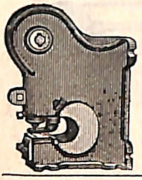
The 4 ft. lift is Standard and can be furnished promptly from our factory.

PRICE LIST OF VERTICAL AIR HOISTS.

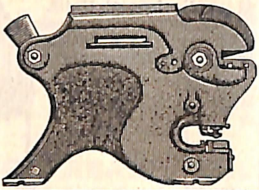
Inside Dia. of Cylinder.	Will lift at air pressure 100 lbs.	"Type B" Price for 4 ft. Lift.	"Type A" Price for 4 ft. Lift.	Extra per foot add'l lift.	Cubic ft. air required to make lift. (Estimated)	Add to stroke to get total length between bearing points of hooks. Type A	Add to stroke to get total length between bearing points of hooks. Type B	Shipping Weight 4 ft. Hoist.
3 in.	600 lbs.	$ 30.00	$ 34.15	$ 3.35	2.00 ft.	20 in.	11⅝ in.	125 lbs
4 "	1100 "	36.65	40.85	4.15	3.00 "	20 "	11⅝ "	140 "
5 "	1700 "	43.35	47.50	5.85	4.00 "	20¼ "	11⅞ "	160 "
6 "	2500 "	51.65	55.85	8.35	6.25 "	20⅝ "	12⅛ "	200 "
7 "	3300 "	68.35	72.50	7.65	7.25 "	21¾ "	13¼ "	550 "
8 "	4500 "	75.00	79.15	8.85	9.25 "	23 "	14¾ "	650 "
9 "	5500 "	83.33	87.50	9.60	.....	25½ "	16½ "	800 "
10 "	7000 "	93.35	97.50	10.00	15.00 "	26 "	17¼ "	860 "
12 "	10000 "	115.00	119.15	11.15	22.00 "	26¾ "	18 "	1055 "
14 "	13000 "	138.35	144.15	12.00	28.25 "	30¼ "	20½ "	1260 "
16 "	18000 "	165.00	170.85	14.60	36.75 "	31¼ "	22 "	1650 "
18 "	23000 "	206.65	212.50	18.25	.....	33 "	24 "	1900 "
20 "	28000 "	250.00	255.85	20.00	.....	36 "	26 "	2300 "
22 "	34000 "	.....	.....	.....	.....	39 "	29 "	.....
24 "	40000 "	.....	.....	.....	.....	42 "	32 "	.....

HAND POWER TOOLS.

SMALL PUNCH.



COMBINED PUNCH AND SHEAR.

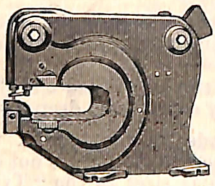


SMALL SHEARS.



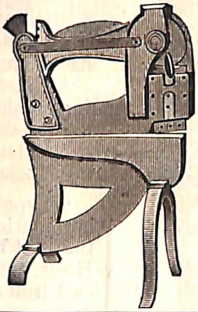
BOILERMAKERS' LEVER PUNCH.

Made any size or capacity desired.



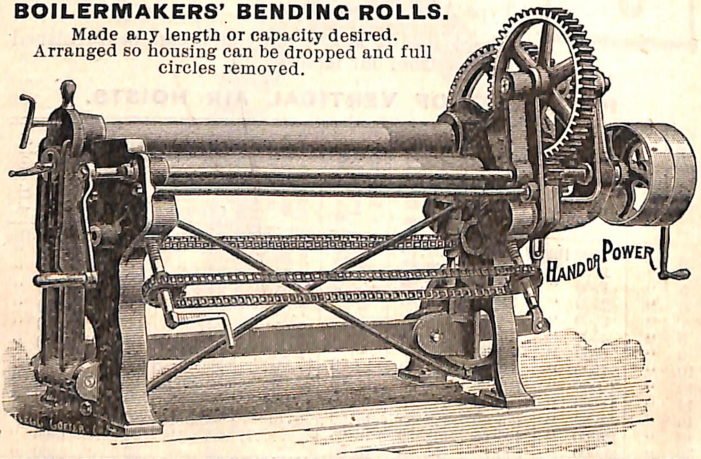
BOILERMAKERS' SPLITTING SHEARS.

Made any capacity desired.



BOILERMAKERS' BENDING ROLLS.

Made any length or capacity desired.
Arranged so housing can be dropped and full circles removed.



SEND FOR ILLUSTRATED CATALOGUE.

SECOND-HAND MACHINERY.

Robinson Sheet Iron Shear, to cut No. 12.

One Power Punch, 21 in. throat.

One set Power Rolls, 9 ft long, top roll 13⅝ in. dia., bottom 9⅞ in. dia.

One Thompson Bevel Shears, to cut ⅝" plate.

One set Bending Rolls, roll 72 in. sheets. Fitted with hinged housing and can be run by hand or power. Strong enough to bend up to ⅝ in. plate.

One set Power Rolls, 12 ft., rolls 10 in. dia., drop housing, weight 19000 lbs.

One Power Plate Planer, 16 ft. long.

One Bement Hydraulic Riveter, 8 ft. gap.....Price, $2,000.00

One 10 ton Hoist ..... " 100.00

One 8-horse Kimble Engine..... " 25.00

Two Cast Iron Bases for 30" stack, price per lb., 1 cent.

One 4" Peet Valve, Scott make..... " 2.50

One No. 4 Chapman Gate Valve.....Each, " 2.50

Two Nickel-plated 1¼" Angle Valves.....Each, " .50

FOR SALE.

Well equipped Steam Boiler Shop, 100 miles from Chicago, with old established business. Party desires to retire on account of failing health. Address Scully Steel & Iron Co.

Half interest in Machine Shop in Iowa doing a general repair business on engines, boilers and threshing machines. Also doing a good business in selling and repairing new and second-hand threshing machinery. Business a good paying one, and partner must be a mechanic and sober, and a man of some means.

Address Scully Steel & Iron Co.

STOCK BOILERS.

LIST OF

PLATES AND HEADS

Kept in stock for standard sizes of tubular boilers, from 30 to 72 in. dia. From six to twelve boilers of each variety carried in stock.

Shell, 30 in. dia. x 6 ft. long.

2 Sh'ts ¼ x 36 x 98
1 " ¼ x 72 x 98
2 Hds. 34 dia. x 5-16 or ⅜ } Flange Steel.

Shell, 30 in. dia. x 8 ft. long.

2 Sh'ts ¼ or 5-16 x 49 x 98
1 Sh't ¼ x 96 x 98
2 Hds. 34 dia. x 5-16 or ⅜ } Flange Steel.

Shell, 36 in. dia. x 8 ft. long.

2 Sh'ts ¼ or 5-16 x 49 x 118
1 " ¼ or 5-16 x 96 x 118
2 Hds. 40 dia. x 5-16, ⅜, 7-16 or ½. } Flange Steel.

Shell, 36 in. dia. x 10 ft. long.

2 Sh'ts ¼, 5-16 or ⅜ x 60 x 120,
2 Hds. 40 dia. x 5-16, ⅜, 7-16 or ½ } Flange Steel.

Shell, 42 in. dia. x 10 ft. long.

2 Sh'ts ¼ or 5-16 x 60 x 138
2 Hds. 46 dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 42 in. dia. x 12 ft. long.

3 Sh'ts ¼ or 5-16 x 49 x 138
2 " ¼ or 5-16 x 72½ x 138
2 Hds. 46 dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 42 in. dia. x 14 ft. long.

3 Sh'ts ¼ or 5-16 x 57 x 138
2 " ¼ or 5-16 x 84 x 138
2 Hds. 46 dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 42 in. dia. x 16 ft. long.

4 Sh'ts ¼ or 5-16 x 49 x 138
3 " ¼ or 5-16 x 64¾ x 138
2 " ½ or 5-16 x 95½ x 138
2 Hds. 46 dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 44 in. dia. x 12 ft. long.

3 Sh'ts ¼ or 5-16 x 49 x 143
2 " ¼ or 5-16 x 72½ x 143
2 Hds. 48 dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 44 in. dia. x 14 ft. long.

3 Sh'ts ¼ or 5-16 x 57 x 143
2 Sh'ts ¼ x 84½ x 143
2 Hds. 48 dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 48 in. dia. x 12 ft. long.

6 Sh'ts 5-16 x 49 x 80
3 " ¼ or 5-16 x 49 x 156
2 " ¼ or 5-16 x 72½ x 156
2 Hds. 52½ dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 48 in. dia. x 14 ft. long.

3 Sh'ts ¼ or 5-16 x 57 x 156
2 " ¼ or 5-16 x 84½ x 156
2 Hds. 52½ dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 48 in. dia. x 16 ft. long.

4 Sh'ts ¼ or 5-16 x 49 x 156
3 " ¼ or 5-16 x 64¾ x 156
2 " ¼ or 5-16 x 95½ x 156
2 Hds. 52½ dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 48 in. dia. x 18 ft. long.

3 Sh'ts ¼ or 5-16 x 72½ x 156
Hds. 52½ dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 54 in. dia. x 14 ft. long.

6 Sh'ts 5-16 x 57 x 90
3 " 5-16 x 57 x 176
2 " 5-16 x 84½ x 176
2 Hds. 58½ dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 54 in. dia. x 16 ft. long.

6 Sh'ts 5-16 x 64¾ x 90
3 " 5-16 x 64¾ x 176
2 " 5-16 x 95½ x 176
2 Hds. 58½ dia. x ⅜, 7-16 or ½ } Flange Steel.

Shell, 54 in. dia. x 18 ft. long.

6 Sh'ts 5-16 x 72½ x 90
3 " 5-16 x 72½ x 176
2 Hds. 58½ dia. x ⅜, 7-16 or ½ } Flange Steel.

Dome Plates, Steam and Mud Drum Plates, Boiler Tubes, Rivets, Braces, Pressed Steel Lugs, and Wrought Steel Flanges furnished with above as ordered.

STOCK BOILERS—Continued.

Shell, 60 in. dia. x 12 ft. long.

6 Sh'ts 5-16 x 49 x 99
3 " 5-16 x 49 x 194
2 " 5-16 x 72½ x 194
2 Hds. 65 dia. x ⅜, 7-16 or ½
} Flange Steel.

Shell, 60 in. dia. x 14 ft. long.

6 Sh'ts 5-16 x 57 x 99
3 " 5-16 x 57 x 194
2 " 5-16 x 84½ x 194
2 Hds. 65 dia. x ⅜, 7-16 or ½
} Flange Steel.

Shell, 60 in. dia. x 16 ft. long.

6 Sh'ts 5-16 or ⅜ x 64¾ x 99
3 " 5-16 or ⅜ x 64¾ x 194
2 " 5-16 or ⅜ x 95½ x 194
2 Hds. 65 dia. x ⅜, 7-16 or ½
} Flange Steel.

Shell, 60 in. dia. x 18 ft. long.

6 Sh'ts 5-16 or ⅜ x 72½ x 99
3 " 5-16 or ⅜ x 72½ x 194
2 " 5-16 or ⅜ x 107½ x 194
2 Hds. 65 dia. x ⅜, 7-16 or ½
} Flange Steel.

Shell, 66 in. dia. x 16 ft. long.

6 Sh'ts ⅜ x 64¾ x 108½
3 " ⅜ x 64¾ x 212½
2 " ⅜ x 95½ x 212½
2 Hds. 71 dia. x ½ or ⅝
} Flange Steel.

Shell, 66 in. dia. x 18 ft. long.

6 Sh't's ⅜ x 72½ x 108½
3 " ⅜ x 72½ x 212½
2 " ⅜ x 107½ x 212½
2 Hds. 71 dia. x ½ or ⅝
} Flange Steel.

Shell, 72 in. dia. x 16 ft. long.

6 Sh'ts ⅜ x 64¾ x 118
3 " ⅜ x 64¾ x 232½
2 " ⅜ x 95½ x 232½
2 Hds. 77 dia. x ½ or ⅝
} Flange Steel.

Shell, 72 in. dia. x 18 ft. long.

6 Sh'ts ⅜ x 72½ x 118
3 " ⅜ x 72½ x 232½
2 " ⅜ x 107½ x 232½
2 Hds. 77 dia. x ½ or ⅝
} Flange Steel.

Dome Plates, Steam and Mud Drum Plates, Boiler Tubes, Rivets, Braces, Pressed Steel Lugs and Wrought Steel Flanges furnished with above as ordered.

RENDERING TANKS.

LIST OF

STEEL PLATES AND SEGMENTS

Kept in stock for six-foot Rendering Tanks.

Tank, 6 ft. dia. x 12 ft. long.

6 Sh'ts 5-16 or ⅜ x 49 x 117
4 " ⅜ or ½ x 72½ x 118
2 " ⅜ or ½ x 72½ x 232½

Top Head:
6 Segments No. 1 x ⅜ or ½

Bottom Head:
6 Segments No. 3 x ⅜ or ½
} Tank Steel.

Tank, 6 ft. dia. x 14 ft. long.

6 Sh'ts ⅜ or ½ x 57 x 118

Top Head:
6 Segments No. 1 x ⅜ or ½

Bottom Head:
6 Segments No. 3 x ⅜ or ½
} Tank Steel.

Tank, 6 ft. dia. x 16 ft. long.

8 Sh'ts 5-16 or ⅜ x 49 x 118
6 " ⅜ or ½ x 65 x 118
4 " ⅜ or ½ x 95½ x 118
2 " ⅜ or ½ x 95½ x 232½

Top Head:
6 Segments No. 1 x ⅜ or ½

Bottom Head:
6 Segments No. 3 x ⅜ or ½
} Tank Steel.

Tank, 6 ft. dia. x 18 ft. long.

6 Sh'ts ⅜ or ½ x 72½ x 118
3 " ⅜ or ½ x 72½ x 232½
2 " ⅜ or ½ x 107½ x 232½

Top Head:
6 Segments No. 1 x ⅜ or ½

Bottom Head:
6 Segments No. 3 x ⅜ or ½
} Tank Steel.

We have in Stock, No. 2 Segments for Tanks with Slide Gate Valves. When wanted, we can supply from stock, Heads flanged and dished for six-foot Rendering Tanks.

WEIGHTS OF STEEL BOILER HEADS.

Dia. of Heads in Inches.	Thickness of Heads.														
	1/8	8/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8	15/16	1
16	7	11	14	18	22	25	29	....	....	....	....	....	....	....	....
18	9	14	18	23	27	32	36	....	....	....	....	....	....	....	....
20	11	17	23	28	34	39	45	....	....	....	....	....	....	....	....
22	14	20	27	34	41	48	55	....	....	....	....	....	....	....	....
24	16	24	32	41	49	57	65	....	....	....	....	....	....	....	....
26	19	29	38	47	57	67	76	....	....	....	....	....	....	....	....
28	22	33	44	55	66	77	88	....	....	....	....	....	....	....	....
30	25	38	51	63	76	89	101	....	....	....	....	....	....	....	....
32	29	43	58	72	86	101	115	....	....	....	....	....	....	....	....
34	33	49	65	81	98	114	130	....	....	....	....	....	....	....	....
36	37	55	73	91	109	128	146	162	178	194	210	....	....	....	....
38	41	61	81	102	123	142	163	182	201	220	239	....	....	....	....
40	45	68	90	113	135	158	180	203	225	247	269	....	....	....	....
42	50	75	99	124	149	174	199	223	248	272	297	....	....	....	....
44	55	82	109	136	164	191	218	245	273	301	329	....	....	....	....
46	60	89	119	149	179	209	239	268	299	328	358	....	....	....	....
48	65	97	130	162	195	227	259	292	324	357	390	....	....	....	....
50	....	106	141	176	211	246	281	317	352	387	422	....	....	....	....
52½	....	115	153	192	230	268	307	346	385	423	461	....	....	....	....
54	....	123	164	205	246	287	328	369	410	451	492	....	....	....	....
56	....	132	177	221	265	309	353	397	441	485	530	....	....	....	....
58½	....	143	190	239	286	333	382	430	477	525	572	....	....	....	....
59	....	147	196	245	294	343	392	441	490	539	588	....	....	....	....
60	....	154	204	254	305	356	408	457	510	561	612	....	....	....	....
62	....	165	219	273	328	382	437	492	546	601	656	....	....	....	....
64	....	175	233	291	349	407	466	524	582	640	699	....	....	....	....
65	....	181	240	300	360	420	480	540	600	661	721	....	....	....	....
66	....	186	248	310	371	433	495	557	619	681	743	....	....	....	....
68	....	198	263	329	394	460	526	591	657	723	789	....	....	....	....
70	....	210	279	348	418	487	557	627	696	766	836	....	....	....	....
71	....	217	287	358	430	502	573	645	717	788	860	....	....	....	....
72	....	222	295	368	442	516	589	663	737	810	884	....	....	....	....
74	....	234	311	389	467	545	623	700	778	856	934	....	....	....	....
76	....	247	328	410	492	575	657	739	821	903	985	1067	1149	1231	1313
77	....	....	337	421	506	590	674	758	843	927	1011	1095	1180	1264	1348
78	....	....	346	432	519	605	692	778	865	951	1038	1124	1210	1297	1383
80	....	....	367	458	550	641	733	830	917	1008	1100	1192	1283	1384	1476
82	....	....	388	485	582	679	776	872	969	1066	1163	1260	1357	1454	1551
84	....	....	407	509	610	712	814	916	1017	1119	1221	1322	1424	1526	1628
86	....	....	427	533	640	746	853	960	1066	1173	1280	1386	1493	1599	1706
88	....	....	447	558	670	782	893	1005	1117	1228	1340	1452	1563	1675	1787
89	....	....	457	571	685	799	914	1028	1142	1256	1370	1485	1599	1712	1827
90	....	....	467	584	701	817	934	1051	1168	1285	1401	1518	1635	1752	1869
92	....	....	508	610	732	854	976	1098	1220	1342	1463	1586	1708	1830	1953
94	....	....	530	637	764	892	1019	1146	1274	1401	1529	1656	1783	1911	2038
96	....	....	553	664	797	930	1063	1196	1329	1462	1594	1727	1860	1993	2126
98	....	....	576	692	831	969	1108	1246	1384	1523	1662	1800	1939	2077	2215
100	....	....	600	721	865	1009	1153	1297	1442	1585	1730	1874	2018	2163	2307
101	....	....	612	735	882	1029	1175	1322	1470	1616	1764	1910	2058	2205	2352
102	....	....	....	750	899	1048	1197	1347	1498	1647	1798	1947	2098	2248	2398
103	....	....	....	764	916	1068	1219	1372	1525	1678	1832	1984	2138	2291	2444
104	....	....	....	779	933	1087	1241	1395	1551	1706	1862	2023	2178	2333	2488
106	....	....	....	808	967	1127	1286	1445	1605	1765	1926	2090	2254	2416	2578
108	....	....	....	836	1001	1166	1331	1496	1660	1827	1994	2162	2331	2499	2666
110	....	....	....	865	1035	1205	1376	1547	1717	1888	2060	2232	2405	2580	2753
112	....	....	....	894	1069	1245	1420	1596	1773	1950	2128	2306	2484	2663	2842
114	....	....	....	923	1103	1284	1464	1645	1827	2010	2194	2377	2560	2745	2930
116	....	....	....	985	1168	1350	1533	1716	1898	2081	2263	2446	2628	2811	2993
118	....	....	....	1026	1216	1406	1596	1786	1976	2166	2356	2546	2736	2926	3116
120	....	....	....	1060	1256	1452	1649	1845	2041	2237	2434	2630	2826	3022	3219
122	....	....	....	1093	1296	1499	1701	1904	2106	2309	2511	2714	2916	3119	3321
124	....	....	....	1134	1344	1544	1764	1974	2184	2394	2604	2814	3024	3234	3444
126	....	....	....	1168	1384	1600	1817	2033	2249	2465	2682	2898	3114	3330	3547

In figuring weight of Steel Heads, add to above the allowances for overweight adopted by Ass'n Am. Steel Manufacturers and shown on page 95.

WEIGHTS OF IRON AND STEEL.

Thickness in Inches.	Weight per Sq. Foot. IRON.	STEEL.	Thickness in Inches.	Weight per Sq. Foot. IRON.	STEEL.
1-32	1.263	1.35	11-16	27.79	28.50
1-16	2.526	2.75	3-4	30.31	31.00
3-32	3.789	4.00	13-16	32.84	33.50
1-8	5.052	5.35	7-8	35.37	36.00
5-32	6.315	6.75	15-16	37.89	38.50
3-16	7.578	7.85	1	40.42	41.00
7-32	8.841	9.25	1 1-16	42.50	43.50
1-4	10.10	11.00	1 1-8	45.00	46.00
9-32	11.37	11.75	1 3-16	47.50	48.50
5-16	12.63	13.50	1 1-4	50.00	51.00
11-32	13.89	14.25	1 5-16	52.50	53.50
3-8	15.16	16.00	1 3-8	55.00	56.10
13-32	16.42	16.75	1 7-16	57.50	58.65
7-16	17.68	18.50	1 1-2	60.63	61.20
15-32	18.95	19.25	1 3-4	70.73	71.40
1-2	20.21	21.00	1 7-8	75.00	76.50
9-16	22.73	23.50	2	80.83	81.60
5-8	25.26	26.00			

BIRMINGHAM GAUGE.

No. of Gauge.	Thickn's in Inches.	Weight per Sq. Ft. IRON.	STEEL.
0000	.454	18.22	18.46
000	.425	17.05	17.28
00	.38	15.25	15.45
0	.34	13.64	13.82
1	.3	12.04	12.20
2	.284	11.40	11.55
3	.259	10.39	10.53
4	.238	9.55	9.68
5	.22	8.83	8.95
6	.203	8.15	8.25
7	.18	7.22	7.32
8	.165	6.62	6.71
9	.148	5.94	6.02
10	.134	5.38	5.45
11	.12	4.82	4.88
12	.109	4.37	4.43
13	.095	3.81	3.86
14	.083	3.33	3.37
15	.072	2.89	2.93
16	.065	2.61	2.64
17	.058	2.33	2.36
18	.049	1.97	1.99
19	.042	1.69	1.71
20	.035	1.40	1.42
21	.032	1.28	1.30
22	.028	1.12	1.14
23	.025	1.00	1.02
24	.022	.883	.895
25	.02	.803	.813
26	.018	.722	.732
27	.016	.642	.651
28	.014	.562	.569

The U. S. Standard Gauge is the one commonly used in the United States.

U. S. STANDARD GAUGE.

Adopted by U. S. Gov't July 1, 1893.

No. of Gauge.	Thickness in Ins. Fract'ns	Decim's	Weight per sq. ft.
0000000	1/2	.5	20.00
000000	15/32	.468	18.75
00000	7/16	.437	17.50
0000	13/32	.406	16.25
000	3/8	.375	15.
00	11/32	.343	13.75
0	5/16	.312	12.50
1	9/32	.281	11.25
2	17/64	.265	10.625
3	1/4	.25	10.
4	15/64	.234	9.375
5	7/32	.218	8.75
6	13/64	.203	8.125
7	3/16	.187	7.5
8	11/64	.171	6.875
9	5/32	.156	6.25
10	9/64	.140	5.625
11	1/8	.125	5.
12	7/64	.109	4.375
13	3/32	.093	3.75
14	5/64	.078	3.125
15	9/128	.070	2.8125
16	1/16	.062	2.5
17	9/160	.056	2.25
18	1/20	.05	2.
19	7/160	.043	1.75
20	1/32	.037	1.50
21	11/320	.034	1.375
22	1/32	.031	1.25
23	9/320	.028	1.125
24	1/40	.025	1.
25	7/320	.021	.875
26	1/48	.018	.75
27	11/640	.017	.6875
28	1/64	.015	.625
30	1/80	.012	.5

In figuring weight of Steel Plates add to above the allowances for overweight, adopted by Association American Steel Manufacturers, as shown on page 95.

WEIGHTS OF ROUND AND SQUARE IRON.

Per lineal foot.

Size in Inches.	Weight in Lbs. ●	Weight in Lbs. ■	Size in Inches.	Weight in Lbs. ●	Weight in Lbs. ■
3/16	.0930	.1184	2 1/8	11.95	15.21
1/4	.1653	.2105	2 1/4	13.39	17.05
5/16	.2583	.3290	2 3/8	14.92	19.00
3/8	.3720	.4736	2 1/2	16.53	21.05
7/16	.5063	.6446	2 5/8	18.23	23.21
1/2	.6613	.8420	2 3/4	20.01	25.47
9/16	.8370	1.066	3	23.81	30.31
5/8	1.033	1.316	3 1/4	27.94	35.57
3/4	1.488	1.895	3 1/2	32.41	41.26
7/8	2.025	2.579	3 3/4	37.20	47.37
1	2.645	3.368	4	42.33	53.89
1 1/8	3.348	4.263	4 1/2	53.57	.....
1 1/4	4.133	5.263	5	66.13	.....
1 3/8	5.001	6.368	5 1/2	80.02	.....
1 1/2	5.952	7.578	6	95.23	.....
1 5/8	6.985	8.893	6 1/2	111.8	.....
1 3/4	8.101	10.31	7	129.6	.....
1 7/8	9.300	11.84	8	169.3	.....
2	10.58	13.47	.....	.....	.....

WEIGHTS OF FLAT IRON.

Per lineal foot in pounds.

Width in Inches.	Thickness in Inches.											
	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
1	.21	.42	.63	.84	1.05	1.26	1.47	1.68	2.11	2.53	.....	.....
1 1/8	.24	.47	.71	.95	1.18	1.42	1.66	1.90	2.37	2.84	.....	.....
1 1/4	.26	.53	.79	1.05	1.32	1.58	1.84	2.11	2.63	3.16	3.68	4.21
1 3/8	.29	.58	.87	1.16	1.45	1.74	2.03	2.32	2.89	3.47	4.05	4.63
1 1/2	.32	.63	.95	1.26	1.58	1.90	2.21	2.53	3.16	3.79	4.42	5.05
1 5/8	.34	.68	1.03	1.37	1.71	2.05	2.39	2.74	3.42	4.11	4.79	5.47
1 3/4	.37	.74	1.11	1.47	1.84	2.21	2.58	2.95	3.68	4.42	5.16	5.89
2	.42	.84	1.26	1.68	2.11	2.53	2.95	3.37	4.21	5.05	5.89	6.74
2 1/4	.47	.95	1.42	1.90	2.37	2.84	3.32	3.79	4.74	5.68	6.83	7.58
2 1/2	.53	1.05	1.58	2.11	2.63	3.16	3.68	4.21	5.26	6.32	7.37	8.42
2 3/4	.58	1.16	1.74	2.32	2.89	3.47	4.05	4.63	5.79	6.95	8.10	9.26
3	.63	1.26	1.90	2.53	3.16	3.79	4.42	5.05	6.32	7.58	8.84	10.10
3 1/4	.68	1.37	2.05	2.74	3.42	4.11	4.79	5.47	6.84	8.21	9.58	10.95
3 1/2	.74	1.47	2.21	2.95	3.68	4.42	5.16	5.89	7.37	8.84	10.32	11.79
3 3/4	.79	1.58	2.37	3.16	3.95	4.74	5.53	6.32	7.89	9.47	11.05	12.63
4	.84	1.68	2.53	3.37	4.21	5.05	5.89	6.74	8.42	10.10	11.79	13.47
4 1/2	.95	1.90	2.84	3.79	4.74	5.68	6.63	7.58	9.47	11.38	13.26	15.16
5	1.05	2.11	3.16	4.21	5.26	6.32	7.37	8.42	10.53	12.63	14.74	16.84
5 1/2	1.16	2.32	3.47	4.63	5.79	6.95	8.10	9.26	11.58	13.89	16.21	18.52
6	1.26	2.53	3.79	5.05	6.32	7.58	8.84	10.10	12.63	15.16	17.68	20.21
7	1.47	2.94	4.42	5.90	7.36	8.84	10.32	11.79	14.74	17.68	20.64	23.58
8	1.68	3.36	5.05	6.74	8.42	10.10	11.78	13.48	16.84	20.20	23.58	26.94

WEIGHTS OF ROUND AND SQUARE STEEL

Per lineal foot. One cubic foot of steel weighs 490 lbs.

Sizes in Inches.	● Weight in Lbs.	■ Weight in Lbs.	Sizes in Inches.	● Weight in Lbs.	■ Weight in Lbs.	Sizes in Inches.	● Weight in Lbs.	■ Weight in Lbs.
1/16	.010	.013	4 1/16	44.07	56.11	8 1/16	173.6	221.0
1/8	.042	.053	4 1/8	45.44	57.85	8 1/8	176.3	224.5
3/16	.094	.119	4 3/16	46.83	59.62	8 3/16	179.0	228.0
1/4	.167	.212	4 1/4	48.24	61.41	8 1/4	181.8	231.4
5/16	.261	.333	4 5/16	49.66	63.23	8 5/16	184.5	234.9
3/8	.375	.478	4 3/8	51.11	65.08	8 3/8	187.3	238.5
7/16	.511	.651	4 7/16	52.58	66.95	8 7/16	190.1	242.0
1/2	.667	.850	4 1/2	54.07	68.85	8 1/2	193.0	245.6
9/16	.845	1.076	4 9/16	55.59	70.78	8 9/16	195.7	249.3
5/8	1.043	1.328	4 5/8	57.12	72.73	8 5/8	198.7	252.9
11/16	1.262	1.608	4 11/16	58.67	74.70	8 11/16	201.6	256.6
3/4	1.502	1.913	4 3/4	60.25	76.71	8 3/4	204.4	260.3
13/16	1.763	2.245	4 13/16	61.84	78.74	8 13/16	207.4	264.1
7/8	2.044	2.603	4 7/8	63.46	80.81	8 7/8	210.3	267.9
15/16	2.347	2.989	4 15/16	65.10	82.89	8 15/16	213.3	271.6
1	2.670	3.400	5	66.76	85.00	9	216.3	275.4
1 1/16	3.014	3.838	5 1/16	68.44	87.14	9 1/16	219.3	279.3
1 1/8	3.379	4.303	5 1/8	70.14	89.30	9 1/8	222.4	283.2
1 3/16	3.766	4.795	5 3/16	71.86	91.49	9 3/16	225.4	287.0
1 1/4	4.173	5.312	5 1/4	73.60	93.72	9 1/4	228.5	290.9
1 5/16	4.600	5.857	5 5/16	75.37	95.96	9 5/16	231.5	294.9
1 3/8	5.049	6.428	5 3/8	77.15	98.23	9 3/8	234.7	298.9
1 7/16	5.518	7.026	5 7/16	78.95	100.5	9 7/16	237.9	302.8
1 1/2	6 008	7.650	5 1/2	80.77	102.8	9 1/2	241.0	306.8
1 9/16	6.520	8.301	5 9/16	82.62	105.2	9 9/16	244.2	310.9
1 5/8	7.051	8.978	5 5/8	84.49	107.6	9 5/8	247.4	315.0
1 11/16	7.604	9.682	5 11/16	86.38	110.0	9 11/16	250.6	319.1
1 3/4	8.178	10.41	5 3/4	88.29	112.4	9 3/4	253.9	323.2
1 13/16	8.773	11.17	5 13/16	90.22	114.9	9 13/16	257.1	327.4
1 7/8	9.388	11.95	5 7/8	92.17	117.4	9 7/8	260.4	331.6
1 15/16	10.02	12.76	5 15/16	94.14	119.9	9 15/16	263.7	335.8
2	10.68	13.60	6	96.14	122.4	10	267.0	340.0
2 1/16	11.36	14.46	6 1/16	98.14	125.0	10 1/16	270.4	344.3
2 1/8	12.06	15.35	6 1/8	100.2	127.6	10 1/8	273.8	348.5
2 3/16	12.78	16.27	6 3/16	102.2	130.2	10 3/16	277.1	352.9
2 1/4	13.52	17.22	6 1/4	104.3	132.8	10 1/4	280.6	357.2
2 5/16	14.28	18.19	6 5/16	106.4	135.5	10 5/16	284.0	361.6
2 3/8	15.07	19.18	6 3/8	108.5	138.2	10 3/8	287.4	366.0
2 7/16	15.86	20.20	6 7/16	110.7	140.9	10 7/16	290.9	370.4
2 1/2	16.69	21.25	6 1/2	112.8	143.6	10 1/2	294.4	374.9
2 9/16	17.53	22.33	6 9/16	114.9	146.5	10 9/16	297.9	379.4
2 5/8	18.40	23.43	6 5/8	117.2	149.2	10 5/8	301.4	383.8
2 11/16	19.29	24.56	6 11/16	119.4	152.1	10 11/16	305.0	388.3
2 3/4	20.20	25.00	6 3/4	121.7	154.9	10 3/4	308.6	392.9
2 13/16	21.12	26.90	6 13/16	123.9	157.8	10 13/16	312.2	397.5
2 7/8	22.07	28.10	6 7/8	126.2	160.8	10 7/8	315.8	402.1
2 15/16	23.04	29.34	6 15/16	128.5	163.6	10 15/16	319.5	406.8
3	24.03	30.60	7	130.9	166.6	11	323.1	411.4
3 1/16	25.04	31.89	7 1/16	133.2	169.6	11 1/16	326.8	416.1
3 1/8	26.08	33.20	7 1/8	135.6	172.6	11 1/8	330.5	420.9
3 3/16	27.13	34.55	7 3/16	137.9	175.6	11 3/16	334.3	425.5
3 1/4	28.20	35.92	7 1/4	140.4	178.7	11 1/4	337.9	430.3
3 5/16	29.30	37.31	7 5/16	142.8	181.8	11 5/16	341.7	435.1
3 3/8	30.42	38.73	7 3/8	145.3	184.9	11 3/8	345.5	439.9
3 7/16	31.56	40.18	7 7/16	147.7	188.1	11 7/16	349.4	444.8
3 1/2	32.71	41.65	7 1/2	150.2	191.3	11 1/2	353.1	449.6
3 9/16	33.90	43.14	7 9/16	152.7	194.4	11 9/16	357.0	454.5
3 5/8	35.09	44.68	7 5/8	155.2	197.7	11 5/8	360.9	459.5
3 11/16	36.31	46.24	7 11/16	157.8	200.9	11 11/16	364.8	464.4
3 3/4	37.56	47.82	7 3/4	160.3	204.2	11 3/4	368.6	469.4
3 13/16	38.81	49.42	7 13/16	163.0	207.6	11 13/16	372.6	474.4
3 7/8	40.10	51.05	7 7/8	165.6	210.8	11 7/8	376.6	479.5
3 15/16	41.40	52.71	7 15/16	168.2	214.2	11 15/16	380.6	484.5
4	42.73	54.40	8	171.0	217.6	.....	.....	.....

WEIGHTS OF FLAT ROLLED STEEL BARS.

Per lineal foot in pounds. One cubic foot of steel weighs 489.6 lbs.

Thickness in Inches.	Width of Bars.																							
	1″	1¼″	1½″	1¾″	2″	2¼″	2½″	2¾″	3″	3¼″	3½″	3¾″	4″	4¼″	4½″	4¾″	5″	5¼″	5½″	5¾″	6″	6¼″	6½″	6¾″
1/16	.212	.265	.319	.372	.425	.478	.531	.584	.637	.690	.743	.797	.849	.902	.956	1.01	1.06	1.11	1.17	1.22	1.28	1.33	1.38	1.43
1/8	.425	.531	.637	.743	.849	.956	1.06	1.17	1.28	1.38	1.49	1.59	1.70	1.81	1.92	2.02	2.12	2.23	2.34	2.45	2.55	2.65	2.76	2.83
3/16	.638	.797	.957	1.11	1.28	1.44	1.59	1.75	1.91	2.07	2.23	2.39	2.55	2.71	2.87	3.03	3.19	3.35	3.51	3.67	3.83	3.99	4.14	4.30
1/4	.850	1.06	1.28	1.49	1.70	1.91	2.12	2.34	2.55	2.76	2.98	3.19	3.40	3.61	3.83	4.04	4.25	4.46	4.67	4.89	5.10	5.31	5.53	5.74
5/16	1.06	1.33	1.59	1.86	2.12	2.39	2.65	2.92	3.19	3.45	3.72	3.99	4.25	4.52	4.78	5.05	5.31	5.58	5.84	6.11	6.38	6.64	6.90	7.17
3/8	1.28	1.59	1.92	2.23	2.55	2.87	3.19	3.51	3.83	4.15	4.47	4.78	5.10	5.42	5.74	6.06	6.38	6.69	7.02	7.34	7.65	7.97	8.29	8.61
7/16	1.49	1.86	2.23	2.60	2.98	3.35	3.72	4.09	4.46	4.83	5.20	5.58	5.95	6.32	6.70	7.07	7.44	7.81	8.18	8.56	8.93	9.29	9.67	10.04
1/2	1.70	2.12	2.55	2.98	3.40	3.83	4.25	4.67	5.10	5.53	5.95	6.38	6.80	7.22	7.65	8.08	8.50	8.93	9.35	9.77	10.20	10.63	11.05	11.48
9/16	1.92	2.39	2.87	3.35	3.83	4.30	4.78	5.26	5.74	6.22	6.70	7.17	7.65	8.13	8.61	9.09	9.57	10.04	10.52	11.00	11.48	11.95	12.43	12.91
5/8	2.12	2.65	3.19	3.72	4.25	4.78	5.31	5.84	6.38	6.91	7.44	7.97	8.50	9.03	9.57	10.10	10.63	11.16	11.69	12.22	12.75	13.28	13.81	14.34
11/16	2.34	2.92	3.51	4.09	4.67	5.26	5.84	6.43	7.02	7.60	8.18	8.76	9.35	9.93	10.52	11.11	11.69	12.27	12.85	13.44	14.03	14.61	15.20	15.78
3/4	2.55	3.19	3.83	4.47	5.10	5.75	6.38	7.02	7.65	8.29	8.93	9.57	10.20	10.84	11.48	12.12	12.75	13.39	14.03	14.67	15.30	15.94	16.58	17.22
13/16	2.76	3.45	4.14	4.84	5.53	6.21	6.90	7.60	8.29	8.98	9.67	10.36	11.05	11.74	12.43	13.12	13.81	14.50	15.19	15.88	16.58	17.27	17.95	18.65
7/8	2.98	3.72	4.47	5.20	5.95	6.69	7.44	8.18	8.93	9.67	10.41	11.16	11.90	12.65	13.39	14.13	14.87	15.62	16.36	17.10	17.85	18.60	19.34	20.08
15/16	3.19	3.99	4.78	5.58	6.38	7.18	7.97	8.77	9.57	10.36	11.16	11.95	12.75	13.55	14.34	15.14	15.94	16.74	17.53	18.33	19.13	19.92	20.72	21.51
1	3.40	4.25	5.10	5.95	6.80	7.65	8.50	9.35	10.20	11.05	11.90	12.75	13.60	14.45	15.30	16.15	17.00	17.85	18.70	19.55	20.40	21.25	22.10	22.95
1 1/16	3.61	4.52	5.42	6.32	7.22	8.13	9.03	9.93	10.84	11.74	12.65	13.55	14.45	15.35	16.26	17.16	18.06	18.96	19.87	20.77	21.68	22.58	23.48	24.39
1 1/8	3.83	4.78	5.74	6.70	7.65	8.61	9.57	10.52	11.48	12.43	13.39	14.34	15.30	16.26	17.22	18.17	19.13	20.08	21.04	21.99	22.95	23.91	24.87	25.82
1 3/16	4.04	5.05	6.06	7.07	8.08	9.09	10.10	11.11	12.12	13.12	14.13	15.14	16.15	17.16	18.17	19.18	20.19	21.20	22.21	23.22	24.23	25.23	26.24	27.25
1 1/4	4.25	5.31	6.38	7.44	8.50	9.57	10.63	11.69	12.75	13.81	14.87	15.94	17.00	18.06	19.13	20.19	21.25	22.32	23.38	24.44	25.50	26.56	27.62	28.69
1 5/16	4.46	5.58	6.69	7.81	8.93	10.04	11.16	12.27	13.39	14.50	15.62	16.74	17.85	18.96	20.08	21.20	22.32	23.43	24.54	25.66	26.78	27.90	29.01	30.12
1 3/8	4.67	5.84	7.02	8.18	9.35	10.52	11.69	12.85	14.03	15.20	16.36	17.53	18.70	19.87	21.04	22.21	23.38	24.54	25.71	26.88	28.05	29.22	30.39	31.56
1 7/16	4.89	6.11	7.34	8.56	9.78	11.00	12.22	13.44	14.66	15.88	17.10	18.33	19.55	20.77	21.99	23.22	24.44	25.66	26.88	28.10	29.33	30.55	31.77	32.99
1 1/2	5.10	6.38	7.65	8.93	10.20	11.48	12.75	14.03	15.30	16.58	17.85	19.13	20.40	21.68	22.95	24.23	25.50	26.78	28.05	29.33	30.60	31.88	33.15	34.43
1 9/16	5.32	6.64	7.97	9.30	10.63	11.95	13.28	14.61	15.94	17.27	18.60	19.92	21.25	22.58	23.91	25.24	26.57	27.89	29.22	30.55	31.88	33.20	34.53	35.86
1 5/8	5.52	6.90	8.29	9.67	11.05	12.43	13.81	15.19	16.58	17.96	19.34	20.72	22.10	23.48	24.87	26.25	27.63	29.01	30.39	31.77	33.15	34.53	35.91	37.29
1 11/16	5.74	7.17	8.61	10.04	11.47	12.91	14.34	15.78	17.22	18.65	20.08	21.51	22.95	24.38	25.82	27.26	28.69	30.12	31.55	32.99	34.43	35.86	37.30	38.73
1 3/4	5.95	7.44	8.93	10.42	11.90	13.40	14.88	16.37	17.85	19.34	20.83	22.32	23.80	25.29	26.78	28.27	29.75	31.24	32.73	34.22	35.70	37.19	38.68	40.17
1 13/16	6.16	7.70	9.24	10.79	12.33	13.86	15.40	16.95	18.49	20.03	21.57	23.11	24.65	26.19	27.73	29.27	30.81	32.35	33.89	35.43	36.98	38.52	40.05	41.60
1 7/8	6.38	7.97	9.57	11.15	12.75	14.34	15.94	17.53	19.13	20.72	22.31	23.91	25.50	27.10	28.69	30.28	31.87	33.47	35.06	36.65	38.25	39.85	41.44	43.03
1 15/16	6.59	8.24	9.88	11.53	13.18	14.83	16.47	18.12	19.77	21.41	23.06	24.70	26.35	28.00	29.64	31.29	32.94	34.59	36.23	37.88	39.53	41.17	42.82	44.46
2	6.80	8.50	10.20	11.90	13.60	15.30	17.00	18.70	20.40	22.10	23.80	25.50	27.20	28.90	30.60	32.30	34.00	35.70	37.40	39.10	40.80	42.50	44.20	45.90

WEIGHTS OF FLAT ROLLED STEEL BARS—Continued.

Per lineal foot in pounds. One cubic foot of steel weighs 489.6 lbs.

Thickness in Inches.	Width of Bars.																							
	7″	7¼″	7½″	7¾″	8″	8¼″	8½″	8¾″	9″	9¼″	9½″	9¾″	10″	10¼″	10½″	10¾″	11″	11¼″	11½″	11¾″	12″	12¼″	12½″	12¾″
1/16	1.49	1.54	1.59	1.65	1.70	1.75	1.81	1.86	1.92	1.97	2.02	2.07	2.12	2.18	2.23	2.28	2.34	2.39	2.45	2.50	2.55	2.60	2.65	2.70
1/8	2.98	3.08	3.18	3.29	3.40	3.50	3.62	3.72	3.83	3.92	4.04	4.14	4.25	4.36	4.46	4.56	4.67	4.79	4.90	5 00	5.10	5.20	5.31	5.41
3/16	4.46	4.62	4.78	4.94	5.10	5.26	5.42	5.58	5.74	5.90	6.06	6.22	6.38	6.54	6.70	6.86	7.02	7.17	7.32	7.49	7.65	7.82	7.98	8.13
1/4	5.95	6.16	6.36	6.58	6.80	7.01	7.22	7.43	7.65	7.86	8.08	8.29	8.50	8.71	8.92	9.14	9.34	9.57	9.78	10.00	10.20	10.42	10.63	10.84
5/16	7.44	7.70	7.97	8:23	8.50	8.76	9.03	9.29	9.56	9.83	10.10	10.36	10.62	10.89	11.16	11.42	11.68	11.95	12.22	12.49	12.75	13.01	13.28	13.55
3/8	8.93	9.25	9.57	9.88	10.20	10.52	10.84	11.16	11.48	11.80	12.12	12.44	12.75	13.07	13.39	13.71	14.03	14.35	14.68	14.99	15.30	15.62	15.94	16.26
7/16	10.41	10.78	11.16	11.53	11.90	12.27	12.64	13.02	13.40	13.76	14.14	14.51	14.88	15.25	15.62	15.99	16.33	16.74	17.12	17.49	17.85	18.23	18.60	18.97
1/2	11.90	12.32	12.75	13.18	13.60	14.03	14.44	14.87	15.30	15.73	16.16	16.58	17.00	17.42	17.85	18.28	18.70	19.13	19.55	19.97	20.40	20.82	21.25	21.67
9/16	13.39	13.86	14.34	14.82	15.30	15.78	16.26	16.74	17.22	17.69	18.18	18.65	19.14	19.61	20.08	20.56	21.02	21.51	22.00	22.48	22.95	23.43	23.90	24.39
5/8	14.87	15.40	15.94	16.47	17.00	17.53	18.06	18.59	19.13	19.65	20.19	20.72	21.25	21.78	22.32	22.85	23.38	23.91	24.44	24.97	25.50	26.03	26.56	27.09
11/16	16.36	16.94	17.53	18.12	18.70	19.28	19.86	20.45	21.04	21.62	22.21	22.79	23.38	23.96	24.54	25.13	25.70	26.30	26.88	27.47	28.05	28.64	29.22	29.80
3/4	17.85	18.49	19.13	19.77	20.40	21.04	21.68	22.32	22.96	23.59	24.23	24.86	25.50	26.14	26.78	27.42	28.05	28.68	29.33	29.97	30.60	31.25	31.88	32.52
13/16	19.34	20.03	20.72	21.41	22.10	22.79	23.48	24.17	24.86	25.55	26.24	26.94	27.62	28.32	29.00	29.69	30.40	31.08	31.76	32.46	33.15	33.83	34.53	35.22
7/8	20.83	21.57	22.32	23.05	23.80	24.55	25.30	26.04	26.78	27.52	28.26	29.01	29.75	30 50	31.24	31.98	32.72	33.47	34.21	34.95	35.70	36.44	37.19	37.93
15/16	22.32	23.11	23.91	24.70	25.50	26.30	27.10	27.89	28.69	29.49	30.28	31.08	31.88	32.67	33.48	34.28	35.06	35.86	36.66	37.46	38.25	39.05	39.84	40.64
1	23.80	24.65	25.50	26.35	27.20	28.05	28.90	29.75	30.60	31.45	32.30	33.15	34.00	34.85	35.70	36.55	37.40	38.25	39.10	39.95	40.80	41.65	42.50	43.35
1 1/16	25.29	26.19	27.10	28.00	28.90	29.80	30.70	31.61	32.52	33.41	34.32	35.22	36.12	37.03	37.92	38.83	39.74	40.64	41.54	42.45	43.35	44.25	45.16	46.06
1 1/8	26.78	27.73	28.68	29.64	30.60	31.56	32.52	33.47	34.43	35.38	36.34	37.29	38.25	39.21	40.17	41.12	42.08	43.04	44.00	44.94	45.90	46.86	47.82	48.77
1 3/16	28.26	29.27	30.28	31.29	32.30	33.31	34.32	35.33	36.34	37.35	38.36	39.37	40.38	41.39	42.40	43.40	44.42	45.42	46.44	47.45	48.45	49.46	50.46	51.48
1 1/4	29.75	30.81	31.88	32.94	34.00	35.06	36.12	37.20	38.26	39.31	40.37	41.44	42.50	43.56	44.63	45.69	46.76	47.82	48.88	49.94	51.00	52.06	53.12	54.19
1 5/16	31.23	32.35	33.48	34.59	35.70	36.81	37.93	39.05	40.16	41.28	42.40	43.52	44.64	45.75	46.86	47.97	49.08	50.25	51.42	52.59	53.76	54.93	56.10	57.27
1 3/8	32.72	33.89	35.06	36.23	37.40	38.57	39.74	40.91	42.08	43.25	44.41	45.58	46.75	47.92	49.08	50.25	51.42	52.59	53.76	54.93	56.10	57.27	58.44	59.60
1 7/16	34.21	35.44	36.66	37.88	39.10	40.32	41.54	42.77	44.00	45.22	46.44	47.66	48.88	50.10	51.32	52.54	53.76	54.99	56.21	57.43	58.65	59.87	61.10	62.32
1 1/2	35.70	36.98	38.26	39.53	40.80	42.08	43.35	44.63	45.90	47.18	48.45	49.73	51.00	52.28	53.55	54.83	56.10	57.37	58.65	59.93	61.20	62.48	63.75	65.03
1 9/16	37.19	38.51	39.84	41.17	42.50	43.83	45.16	46.49	47.82	49.14	50.48	51.80	53.14	54.46	55.78	57.11	58.42	59.76	61.10	62.43	63.75	65.08	66.40	67.74
1 5/8	38.67	40.05	41.44	42.82	44.20	45.58	46.96	48.34	49.73	51.10	52.49	53.87	55.25	56.63	58.02	59.40	60.78	62.16	63.54	64.92	66.30	67.68	69.06	70.44
1 11/16	40.16	41.59	43.03	44.47	45.90	47.33	48.76	50.20	51.64	53.07	54.51	55.94	57.38	58.81	60.24	61.68	63.10	64.55	65.98	67.42	68.85	70.29	71.72	73.15
1 3/4	41.65	43.14	44.63	46.12	47.60	49.09	50.58	52.07	53.56	55.04	56.53	58.01	59.50	60.99	62.48	63.97	65.45	66.93	68.43	69.92	71.40	72.90	74.38	75.87
1 13/16	43.14	44.68	46.22	47.76	49.30	50.84	52.38	53.92	55.46	57.00	58.54	60.09	61.62	63.17	64.70	66.24	67.80	69.33	70.86	72.41	73.95	75.48	77.03	78.57
1 7/8	44.63	46.22	47.82	49.40	51.00	52.60	54.20	55.79	57.38	58.97	60.56	62.16	63.75	65.35	66.94	68.53	70.12	71.72	73.31	74.90	76.50	78.09	79.69	81.28
1 15/16	46.12	47.76	49.41	51.05	52.70	54.35	56.00	57.64	59.29	60.94	62.58	64.23	65.88	67.52	69.18	70.83	72.46	74.11	75.76	77.41	79.05	80.70	82.34	83.99
2	47.60	49.30	51.00	52.70	54.40	56.10	57.80	59.50	61.20	62.90	64.60	66.30	68.00	69.70	71.40	73.10	74.80	76.50	78.20	79.90	81.60	83.30	85.00	86.70

WEIGHTS OF STEEL ANGLES.

Per lineal foot in pounds.

Size in Inches.	Thickness in Inches.														
	1/8	5/32	3/16	7/32	1/4	5/16	3/8	7/16	1/2	9/16	5/8	11/16	3/4	13/16	7/8
7 x 3½	...	....	....	....	....	....	....	15.0	17.0	19.0	21.0	23.0	24.9	26.8	28.7
6 x 6	....	....	....	....	....	....	....	14.4	17.2	19.6	21.9	24.2	26.5	28.7	30.9
6 x 4	....	....	....	....	....	....	12.3	14.3	16.2	18.1	20.0	21.8	23.6	25.4	27.2
6 x 3½	....	....	....	....	....	....	11.7	13.5	15.3	17.1	18.9	20.6	22.3	24.0	25.7
5 x 5	....	....	...	....	....	....	12.3	14.3	16.2	18.1	20.0	21.8	23.6	25.4	27.2
5 x 4	....	....	....	....	....	....	11.0	12.8	14.5	16.2	17.8	19.5	21.1	22.6	24.2
5 x 3½	....	....	....	....	....	....	10.4	12.0	13.6	15.2	16.8	18.3	19.8	21.3	22.7
5 x 3	....	....	....	....	....	8.2	9.8	11.3	12.8	14.2	15.7	17.1	18.5	19.9	...
4½ x 3	....	....	....	....	....	....	9.1	10.5	11.9	13.3	14.6	15.9	17.2	18.5	....
4 x 4	....	....	5.2	....	6.6	8.2	9.8	11.3	12.8	14.3	15.7	17.1	18.5	19.9	....
4 x 3½	....	....	....	....	....	....	9.1	10.5	11.9	13.3	14.6	15.9	17.2	18.5	....
4 x 3	....	....	....	....	....	7.1	8.5	9.8	11.1	12.3	13.6	14.8	16.0	17.1	....
3¾ x 2⅝	...	....	....	....	....	6.4	7.7	8.8	10.0	11.1	12.2	13.3	14.3	....	....
3½ x 3½	....	3.7	....	....	5.7	7.1	8.5	9.8	11.1	12.3	13.6	14.8	16.0	17.1	....
3½ x 3	....	....	....	....	....	6.6	7.8	9.1	10.2	11.4	12.5	13.6	14.7	15.7	....
3½ x 2½	....	....	....	....	4.9	6.1	7.2	8.3	9.4	10.4	11.4	12.4	....	....	....
3¼ x 3¼	....	3.4	....	....	....	...	7.8	9.0	10.2	11.4	12.5	13.6	14.7	...	....
3¼ x 2	....	....	....	...	4.3	5.3	6.2	7.2	8.1	9.0	....	....	....	....	....
3 x 3	2.6	....	...	....	4.9	6.1	7.2	8.4	9.4	10.4	11.4	12.4	13.4	14.4	....
3 x 2½	...	....	....	....	4.5	5.5	6.6	7.6	8.5	9.5	...	....	....	....	....
3 x 2	....	....	3.1	3.6	4.1	5.0	5.9	6.8	7.7	....	....	....	....	....	....
2¾ x 2¾	2.4	....	3.5	....	4.5	5.5	6.6	7.6	8.5	....	....	...	....	....	....
2½ x 2½	2.1	...	3 0	3.6	4.1	5.0	5.9	6.8	7.7	8.5	9.3	10.1	....	....	....
2½ x 2	....	....	2.8	....	3.7	4.5	5.3	6.1	6.8	....	....	...	....	....	....
2½ x 1¾	...	....	2.6	....	....	....	....	....	....	....	....	....	....	....	....
2½ x 1½	...	....	2.4	....	3.2	3.9	4.6	5.3	6.0	....	....	....	....	....	....
2¼ x 2¼	1.9	...	2.8	....	3.7	4.5	5.3	6.1	6.8	....	...	....	....	....	....
2¼ x 1½	....	....	2.3	....	3.0	3.7	4.3	5.0	5.5	....	....	....	....	....	....
2 x 2	1.7	....	2.5	....	3.2	4.0	4.7	5.3	...	....	....	....	....	....	....
2 x 1½	...	....	2.1	....	2.8	3.4	4.0	...	....	....	....	....	....	....	....
2 x 1⅜	....	....	2.1	....	2.7	3.3	3.8	....	...	...	....	....	....	....	....
1¾ x 1¾	1.4	....	2.1	....	2.8	3.4	4.0	4.6	...	....	....	....	....	....	....
1¾ x 1½	....	....	2.0	....	2.6	3.3	3.9	....	....	....	....	....	....	....	....
1½ x 1½	1.2	....	1.8	....	2.4	2.9	3.4	....	....	....	....	...	....	....	....
1⅜ x 1	1.0	....	....	1.6	....	....	....	....	....	....	....	....	....	....	....
1⅜ x ⅞	1.0	...	1.4	....	1.9	...	....	....	....	....	....	....	....	....	....
1¼ x 1¼	1.0	....	1.5	....	1.9	2.4	....	...	....	....	....	....	....	....	....
1⅛ x 1⅛	0.9	....	1.3	....	1.7	2.1	....	....	....	....	....	....	....	....	....
1 x 1	0.8	...	1.2	....	1.5	....	....	....	....	..	....	....	....	....	....
1 x ¾	...	....	1.0	....	....	....	....	....	....	....	....	....	....	....	....
1 x ⅝	0.7	....	1.0	....	....	....	....	....	....	....	....	....	....	....	....
⅞ x ⅞	0.7	...	1.0	....	....	....	....	....	....	....	....	....	....	....	....
¾ x ¾	0.6	....	0.8	....	....	....	....	....	....	....	....	....	....	....	....
⅝ x ⅝	0.5	....	...	....	....	....	....	....	....	....	....	....	....	....	....
.....	....	....	....	....	....	..	....	....	....	....	....	....	....	....	....
.....	....	....	...	....	....	...	....	....	....	....	....	....	....	..	....

WEIGHTS AND DIMENSIONS
OF
STANDARD STEEL CHANNELS.

Depth of Channel in Inches.	Weight per foot in pounds.	Area of Section. Sq. Inch.	Thickness of Web in Inches.	Width of Flange in Inches.
3	4.0	1.19	.17	1.41
"	5.0	1.47	.26	1.50
"	6.0	1.76	.36	1.60
4	5.25	1.55	.18	1.58
"	6.25	1.84	.25	1.65
"	7.25	2.13	.33	1.73
5	6.50	1.95	.19	1.75
"	9.00	2.65	.33	1.89
"	11.50	3.38	.48	2.04
6	8.00	2.38	.20	1.92
"	10.50	3.09	.32	2.04
"	13.00	3.82	.44	2.16
"	15.50	4.56	.56	2.28
7	9.75	2.85	.21	2.09
"	12.25	3.60	.32	2.20
"	14.75	4.34	.42	2.30
"	17.25	5.07	.53	2.41
"	19.75	5.81	.63	2.51
8	11.25	3.35	.22	2.26
"	13.75	4.04	.31	2.35
"	16.25	4.78	.40	2.44
"	18.75	5.51	.49	2.53
"	21.25	6.25	.58	2.62
9	13.25	3.89	.23	2.43
"	15.00	4.41	.29	2.49
"	20.00	5.88	.45	2.65
"	25.00	7.35	.61	2.81
10	15.00	4.46	.24	2.60
"	20.00	5.88	.38	2.74
"	25.00	7.35	.53	2.89
"	30.00	8.82	.68	3.04
"	35.00	10.29	.82	3.18
12	20.50	6.03	.28	2.94
"	25.00	7.35	.39	3.05
"	30.00	8.82	.51	3.17
"	35.00	10.29	.64	3.30
"	40.00	11.76	.76	3.42
15	33.00	9.90	.40	3.40
"	35.00	10.29	.43	3.43
"	40.00	11.76	.52	3.52
"	45.00	13.24	.62	3.62
"	50.00	14.71	.72	3.72
"	55.00	16.18	.82	3.82

WEIGHTS AND DIMENSIONS
OF
STANDARD STEEL TEES.

Width of Flange in Inches.	Depth of Bar in Inches.	Thickness of Flange in Inches.	Thickness of Stem in Inches.	Weight per foot in pounds.	Area of Section. Sq. Inch.
1	1	$\frac{1}{8}$ to $\frac{5}{32}$	$\frac{1}{8}$ to $\frac{5}{32}$	0.89	.26
$1\frac{1}{2}$	$1\frac{1}{2}$	$\frac{3}{16}$ " $\frac{7}{32}$	$\frac{5}{32}$ " $\frac{7}{32}$	1.39	.41
$1\frac{3}{16}$	$1\frac{3}{16}$	$\frac{3}{16}$ " $\frac{1}{4}$	$\frac{5}{32}$ " $\frac{7}{32}$	1.53	.45
$1\frac{1}{4}$	$1\frac{1}{4}$	$\frac{3}{16}$ " $\frac{1}{4}$	$\frac{5}{32}$ " $\frac{1}{4}$	1.61	.47
$1\frac{3}{8}$	$1\frac{3}{8}$	$\frac{3}{16}$ " $\frac{1}{4}$	$\frac{5}{32}$ " $\frac{1}{4}$	1.85	.54
2	2	$\frac{1}{4}$ " $\frac{5}{16}$	$\frac{1}{4}$ " $\frac{5}{16}$	3.70	1.05
2	2	$\frac{5}{16}$ " $\frac{3}{8}$	$\frac{5}{16}$ " $\frac{3}{8}$	4.30	1.26
$2\frac{1}{4}$	$2\frac{1}{4}$	$\frac{1}{4}$ " $\frac{5}{16}$	$\frac{1}{4}$ " $\frac{5}{16}$	4.10	1.19
3	3	$\frac{3}{8}$ " $\frac{7}{16}$	$\frac{3}{8}$ " $\frac{7}{16}$	7.80	2.27
$3\frac{1}{2}$	$3\frac{1}{2}$	$\frac{3}{8}$ " $\frac{7}{16}$	$\frac{3}{8}$ " $\frac{7}{16}$	9.30	2.74

WEIGHTS AND DIMENSIONS
OF
STANDARD STEEL "I" BEAMS.

Depth of Beam in Inches.	Weight per foot in pounds.	Area of Section. Sq. Inch.	Thickness of Web in Inches.	Width of Flange in Inches.
3	5.5	1.63	.17	2.33
"	6.5	1.91	.26	2.42
"	7.5	2.21	.36	2.52
4	7.5	2.21	.19	2.66
"	8.5	2.50	.26	2.73
"	9.5	2.79	.34	2.81
"	10.5	3.09	.41	2.88
5	9.75	2.87	.21	3.00
"	12.25	3.60	.36	3.15
"	14.75	4.34	.50	3.29
6	12.25	3.61	.23	3.33
"	14.75	4.34	.35	3.45
"	17.25	5.07	.47	3.57
7	15.00	4.42	.25	3.66
"	17.50	5.15	.35	3.76
"	20.00	5.88	.46	3.87
8	17.75	5.33	.27	4.00
"	20.25	5.96	.35	4.08
"	22.75	6.69	.44	4.17
"	25.25	7.43	.53	4.26
9	21.00	6.31	.29	4.33
"	25.00	7.35	.41	4.45
"	30.00	8.82	.57	4.61
"	35.00	10.29	.73	4.77
10	25.00	7.37	.31	4.66
"	30.00	8.82	.45	4.80
"	35.00	10.29	.60	4.95
"	40.00	11.76	.75	5.10
12	31.50	9.26	.35	5.00
"	35.00	10.29	.44	5.09
"	40.00	11.76	.56	5.21
15	42.00	12.48	.41	5.50
"	45.00	13.24	.46	5.55
"	50.00	14.71	.56	5.65
"	55.00	16.18	.66	5.75
"	60.00	17.65	.75	5.84
18	55.00	15.93	.46	6.00
"	60.00	17.65	.56	6.10
"	65.00	19.12	.64	6.18
"	70.00	20.59	.72	6.26
20	65.00	19.08	.50	6.25
"	70.00	20.59	.58	6.33
"	75.00	22.06	.65	6.40
24	80.00	23.32	.50	7.00
"	85.00	25.00	.57	7.07
"	90.00	26.47	.63	7.13
"	95.00	27.94	.69	7.19
"	100.00	29.41	.75	7.25

SAFE LOADS IN POUNDS FOR STEEL "I" BEAMS.

Taken from Cambria Iron Co. 1898 book.

Safe loads below are figured for fibre stress of 16,000 pounds per square inch and include weight of beam.

STANDARD "I" BEAMS.

Distance between supports	3 Inch.			4 Inch.				5 Inch.			6 Inch.			7 Inch.			8 Inch				9 Inch.			
	5½ lbs.	6½ lbs.	7½ lbs.	7½ lbs.	8½ lbs.	9½ lbs.	10½ lbs.	9¾ lbs.	12¼ lbs.	14¾ lbs.	12¼ lbs.	14¾ lbs.	17¼ lbs.	15 lbs.	17½ lbs.	20 lbs.	17¾ lbs.	20¼ lbs.	22¾ lbs.	25¼ lbs.	21 lbs.	25 lbs.	30 lbs.	35 lbs.
4 ft.	4410	4780	5180	7950	8470	9000	9520	12900	14520	16160	19370	21320	23280	27600	29850	32140	37920	40130	42740	45360	.....	.....	.....	.....
5 "	3530	3830	4140	6360	6780	7200	7610	10320	11620	12930	15490	17050	18620	22080	23880	25710	30330	32100	34190	36290	.....	.....	.....	.....
6 "	2940	3190	3450	5300	5650	6000	6350	8600	9680	10770	12910	14210	15520	18400	19900	21430	25280	26750	28500	30240	.....	.....	.....	.....
7 "	2520	2730	2960	4540	4840	5140	5440	7370	8300	9230	11070	12180	13300	15770	17060	18370	21670	22930	24420	25920	.....	.....	.....	.....
8 "	2210	2390	2590	3980	4240	4500	4760	6450	7260	8080	9680	10660	11640	13800	14930	16070	18960	20060	21370	22680	25160	27240	30180	33120
9 "	1960	2130	2300	3530	3770	4000	4230	5730	6460	7180	8610	9470	10350	12270	13270	14280	16850	17830	19000	20160	22370	24210	26830	29440
10 "	1770	1910	2070	3180	3390	3600	3810	5160	5810	6460	7750	8530	9310	11040	11940	12860	15170	16050	17100	18140	20130	21790	24150	26500
11 "	1600	1740	1880	2890	3080	3270	3460	4690	5280	5880	7040	7750	8460	10040	10860	11690	13790	14590	15540	16490	18300	19810	21950	24090
12 "	1470	1590	1730	2650	2820	3000	3170	4300	4840	5390	6460	7110	7760	9200	9950	10710	12640	13380	14250	15120	16770	18160	20120	22080
13 "	1360	1470	1590	2450	2610	2770	2930	3970	4470	4970	5960	6560	7160	8490	9190	9890	11670	12350	13150	13960	15480	16760	18570	20380
14 "	1260	1370	1480	2270	2420	2570	2720	3680	4150	4620	5530	6090	6650	7890	8530	9180	10830	11470	12210	12960	14380	15570	17250	18930
15 "	1180	1280	1380	2120	2260	2400	2540	3440	3870	4310	5160	5680	6210	7360	7960	8570	10110	10700	11400	12100	13420	14530	16100	17670
16 "	1100	1200	1290	1990	2120	2250	2380	3220	3630	4040	4840	5330	5820	6900	7460	8030	9408	10030	10690	11340	12580	13620	15090	16560
17 "	1040	1130	1220	1870	1990	2120	2240	3030	3420	3800	4560	5020	5480	6490	7020	7560	8920	9440	10060	10670	11840	12820	14200	15590
18 "	980	1060	1150	1770	1880	2000	2120	2870	3230	3590	4300	4740	5170	6130	6630	7140	8430	8920	9500	10080	11180	12110	13410	14720
19 "	930	1010	1090	1670	1780	1890	2000	2720	3060	3400	4080	4490	4900	5810	6280	6770	7980	8450	9000	9500	10590	11470	12710	13950
20 "	880	960	1040	1590	1690	1800	1900	2580	2900	3230	3870	4260	4660	5520	5970	6430	7580	8030	8550	9070	10064	10900	12070	13250
21 "	840	910	990	1510	1610	1710	1810	2460	2770	3080	3690	4060	4430	5260	5690	6120	7220	7640	8140	8640	9590	10380	11500	12620
22 "	....	....	...	....	....	....	....	2340	2640	2940	3520	3880	4230	5020	5430	5840	6890	7300	7770	8250	9150	9910	10980	12050
23 "	....	....	....	....	....	....	....	2240	2530	2810	3370	3710	4050	4800	5190	5590	6590	6980	7430	7890	8750	9480	10500	11520
24 "	....	....	....	....	....	....	....	2150	2420	2690	3230	3550	3880	4600	4980	5360	6320	6690	7120	7560	8390	9080	10060	11040
25 "	...	....	....	....	....	....	....	2060	2320	2590	3100	3410	3720	4420	4780	5140	6070	6420	6840	7260	8050	8720	9660	10600
26 "	....	....	....	....	....	....	....	1980	2230	2490	2980	3280	3580	4250	4590	4940	5830	6170	6580	6980	7740	8380	9290	10190
27 "	....	....	....	....	....	....	....	1910	2150	2390	2870	3160	3450	4090	4420	4760	5620	5940	6330	6720	7460	8070	8940	9810
28 "	....	....	....	....	....	....	....	....	....	....	2770	3050	3330	3940	4260	4590	5420	5720	6110	6480	7190	7780	8620	9460
29 "	....	....	....	....	....	....	....	....	....	....	2670	2940	3210	3810	4120	4430	5230	5530	5900	6260	6940	7510	8330	9140
30 "	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6710	7260	8050	8830
31 "	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6490	7030	7790	8550

SAFE LOADS IN POUNDS FOR STEEL "I" BEAMS.

Taken from Cambria Iron Co. 1898 book.

Safe loads below are figured for fibre stress of 16,000 pounds per square inch and include weight of beam.

Distance between supports.	STANDARD "I" BEAMS. 10 Inch. 25 lbs.	30 lbs.	35 lbs.	40 lbs.	12 Inch. 31½ lbs.	35 lbs	40 lbs.	STANDARD SPECIAL "I" BEAMS 12 Inch. 40 lbs.	45 lbs.	50 lbs.	55 lbs.	STANDARD "I" BEAMS. 15 Inch. 42 lbs.	45 lbs.	50 lbs.	55 lbs.	60 lbs.	STANDARD SPECIAL "I" BEAMS. 15 Inch. 60 lbs.	65 lbs.	70 lbs.	75 lbs.	80 lbs.
10 ft.	26050	28620	31240	33850	38370	40580	43720	47810	50790	53930	57070	62830	64830	68750	72670	76600	86610	90470	94390	98310	102230
11 "	23680	26020	28400	30780	34880	36890	39740	43470	46180	49030	51880	57120	58940	62500	66070	69630	78740	82240	85810	89370	92940
12 "	21710	23850	26030	28210	31970	33820	36430	39840	42330	44940	47560	52360	54030	57290	60560	63830	72180	75390	78660	81920	85190
13 "	20040	22020	24030	26040	29510	31220	33630	36780	39070	41480	43900	48330	49870	52890	55900	58920	66630	69590	72610	75620	78640
14 "	18610	20450	22310	24180	27400	28990	31230	34150	36280	38520	40760	44880	46310	49110	51910	54710	61870	64620	67420	70220	73020
15 "	17360	19080	20830	22570	25580	27050	29140	31880	33860	35950	38040	41880	43220	45840	48450	51060	57740	60310	62920	65540	68150
16 "	16280	17890	19520	21160	23980	25360	27320	29880	31750	33710	35670	39270	40520	42970	45420	47870	54130	56540	58990	61440	63890
17 "	15320	16840	18380	19910	22570	23870	25720	28130	29880	31720	33570	36960	38140	40440	42750	45060	50950	53220	55520	57830	60140
18 "	14470	15900	17350	18810	21310	22540	24290	26560	28220	29960	31700	34900	36020	38200	40370	42550	48120	50260	52440	54620	56790
19 "	13710	15070	16440	17820	20190	21360	23010	25160	26730	28380	30040	33070	34120	36190	38250	40310	45590	47610	49680	51740	53810
20 "	13020	14310	15620	16930	19180	20290	21860	23910	25400	26960	28530	31410	32420	34380	36340	38300	43310	45230	47190	49150	51120
21 "	12400	13630	14880	16120	18270	19320	20820	22770	24190	25680	27170	29920	30870	32740	34610	36470	41240	43080	44950	46810	48680
22 "	11840	13010	14200	15390	17440	18450	19870	21730	23090	24510	25940	28560	29470	31250	33030	34820	39370	41120	42900	44690	46470
23 "	11320	12450	13580	14720	16680	17640	19010	20790	22080	23450	24810	27320	28190	29890	31600	33300	37660	39330	41040	42740	44450
24 "	10850	11930	13020	14110	15990	16910	18220	19920	21160	22470	23780	26180	27010	28650	30280	31910	36090	37690	39330	40960	42600
25 "	10420	11450	12500	13540	15350	16230	17490	19130	20320	21570	22830	25130	25930	27500	29070	30640	34650	36190	37750	39320	40890
26 "	10020	11010	12020	13020	14760	15610	16810	18390	19540	20740	21950	24160	24940	26440	27950	29460	33310	34790	36300	37810	39320
27 "	9650	10600	11570	12540	14210	15030	16190	17710	18810	19970	22140	23270	24010	25460	26920	28370	32080	33510	34960	36410	37860
28 "	9300	10220	11160	12090	13700	14490	15610	17080	18140	19260	20380	22440	23150	24550	25960	27360	30930	32310	33710	35110	36510
29 "	8980	9870	10770	11670	13230	13990	15070	16490	17510	18600	19680	21660	22360	23710	25060	26410	29870	31200	32550	33900	35250
30 "	8680	9540	10410	11280	12790	13530	14570	15940	16930	17980	19020	20940	21610	22920	24220	25530	28870	30160	31460	32770	34080
31 "	8400	9230	10080	10920	12380	13090	14100	15420	16380	17400	18410	20270	20910	22180	23440	24710	27940	29180	30450	31710	32980
32 "	8140	8950	9760	10580	11990	12680	13660	14940	15870	16850	17830	19630	20260	21490	22710	23940	27070	28270	29500	30720	31950
33 "	7890	8670	9470	10260	11630	12300	13250	14490	15390	16340	17290	19040	19650	20830	22020	23210	26250	27410	28600	29790	30980
34 "	....	....	....	...	11280	11940	12860	14060	14940	15860	16780	18480	19070	20220	21370	22530	25470	26610	27760	28910	30070
35 "	....	...	....	....	10960	11590	12490	13660	14510	15410	16300	17950	18520	19640	20760	21880	24750	25850	26970	28090	29210
36 "	....	...	....	....	10660	11270	12140	13280	14110	14980	15850	17450	18010	19100	20190	21280	24060	25130	26220	27310	28400

SAFE LOADS IN POUNDS FOR STEEL "I" BEAMS.

Taken from Cambria Iron Co. 1898 book.

Safe loads below are figured for fibre stress of 16,000 pounds per square inch and include weight of beam.

Distance between supports.	STANDARD SPECIAL "I" BEAMS. 15 Inch.					STANDARD "I" BEAMS. 18 Inch.				STANDARD "I" BEAMS. 20 Inch.			STANDARD SPECIAL "I" BEAMS. 20 Inch.					STANDARD "I" BEAMS. 24 Inch.				
	80 lbs.	85 lbs.	90 lbs.	95 lbs	100 lbs.	55 lbs.	60 lbs.	65 lbs.	70 lbs.	65 lbs.	70 lbs.	75 lbs.	80 lbs.	85 lbs.	90 lbs.	95 lbs.	100 lbs.	80 lbs.	85 lbs.	90 lbs.	95 lbs.	100 lbs.
10 ft.	112230	116030	119960	123880	127800	94290	99770	104470	109180	124750	130110	135340	156410	160910	166140	171370	176600	185530	192700	198970	205240	211205
11 "	102030	105490	109050	112620	116180	85720	90700	94980	99250	113410	118280	123040	142190	146280	151040	155790	160540	168660	175180	180880	186590	192290
12 "	93520	96700	99960	103230	106500	78570	83140	87060	90980	103960	108430	112780	130340	134090	138450	142810	147160	154610	160580	165810	171040	176270
13 "	86330	89260	92270	95290	98310	72530	76740	80360	83980	95960	100090	104110	120310	123780	127800	131820	135840	142720	148230	153050	157880	162710
14 "	80160	82880	85680	88480	91280	67350	71260	74620	77990	89110	92940	96670	111720	114940	118670	122410	126140	132520	137640	142120	146600	151080
15 "	74820	77360	79970	82580	85200	62860	66510	69650	72790	83170	86740	90230	104270	107270	110760	114250	117730	123690	128460	132650	136830	141010
16 "	70140	72520	74970	77420	79870	58930	62360	65300	68240	77970	81320	84590	97750	100570	103840	107100	110370	115960	120430	124360	128280	132200
17 "	66020	68260	70560	72870	75180	55460	58650	61460	64220	73380	76540	79610	92000	94650	97730	100800	103880	109140	113350	117040	120730	124420
18 "	62350	64460	66640	68820	71000	52380	55430	58040	60660	69310	72280	75190	86890	89390	92300	95200	98110	103070	107050	110540	114020	117510
19 "	59070	61070	63130	65200	67260	49630	52510	54990	57460	65660	68480	71230	82320	84690	87440	90190	92950	97650	101420	104720	108020	111330
20 "	56110	58020	59980	61940	63900	47140	49880	52240	54590	62370	65060	67670	78200	80460	83070	85680	88300	92770	96350	99480	102620	105760
21 "	53440	55250	57120	58990	60860	44900	47510	49750	51990	59400	61960	64450	74480	76620	79110	81600	84090	88350	91760	94750	97740	100720
22 "	51010	52740	54530	56310	58090	42860	45350	47490	49630	56700	59140	61520	71090	73140	75520	77890	80270	84330	87590	90440	93290	96140
23 "	48800	50450	52150	53860	55560	40990	43380	45420	47470	54240	56570	58840	68000	69960	72230	74510	76780	80670	83780	86510	89240	91960
24 "	46760	48350	49980	51620	53250	39290	41570	43530	45490	51980	54210	56390	65170	67050	69220	71400	73580	77330	80290	82900	85520	88130
25 "	44890	46410	47980	49550	51120	37720	39910	41790	43670	49900	52040	54140	62560	64360	66460	68550	70640	74210	77080	79590	82100	84610
26 "	43170	44630	46140	47650	49150	36260	38370	40180	41990	47980	50040	52050	60160	61890	63900	65910	67920	71360	74110	76530	78940	81350
27 "	41570	42980	44430	45880	47330	34920	36950	38690	40440	46200	48190	50130	57930	59600	61530	63470	65410	68720	71310	73690	76020	78340
28 "	40080	41440	42840	44240	45640	33670	35630	37310	38990	44550	46470	48340	55860	57470	59340	61200	63070	66260	68820	71060	73300	75540
29 "	38700	40010	41360	42720	44070	32510	34400	36030	37650	43020	44870	46670	53930	55490	57290	59090	60900	63980	66450	68610	70770	72940
30 "	37410	38680	39990	41290	42600	31430	33260	34820	36390	41580	43370	45110	52140	53640	55380	57120	58870	61840	64230	66320	68410	70510
31 "	36200	37430	38700	39960	41230	30420	32180	33700	35220	40240	41970	43660	50450	51910	53590	55280	56970	59850	62160	64180	66210	68230
32 "	35070	36260	37490	38710	39940	29460	31200	32650	34120	38980	40660	42290	48880	50280	51920	53550	55190	57980	60220	62180	64140	66100
33 "	34010	35160	36350	37540	38730	28570	30230	31660	33080	37800	39430	41010	47400	48760	50350	51930	53510	56220	58390	60290	62200	64100
34 "	33010	34130	35280	36430	37590	27730	29340	30730	32110	36690	38270	39810	46000	47330	48860	50400	51940	54570	56680	58520	60370	62210
35 "	32070	33150	34270	35390	36510	26940	28510	29850	31190	35640	37170	38670	44690	45970	47470	48960	50460	53010	55060	56850	58640	60430
36 "	31170	32230	33320	34410	35500	26190	27710	29020	30330	34650	36140	37590	43450	44700	46150	47600	49050	51540	53530	55270	57010	58760

STANDARD LIST OF BAR STEEL EXTRAS.

ROUNDS AND SQUARES.

⅜ to 3 inches.					Base.	
⅝ and 1 1/16 inch					$ .10	extra
1/32	"	1/16	"		.20	"
3/32			"		.40	"
1/16			"		.50	"
1/8			"		.60	"
1/4	"	9/32	"		.70	"
5/32			"		1.00	"
3/16			"		2.00	"
3 1/16	to	3 1/8	"		.30	"
3 5/16	"	4	"		.50	"
4 1/16	"	4 1/8	"		.60	"
4 5/16	"	5	"		.80	"
5 1/4	"	5 1/2	"		1.00	"
5 3/4	"	6	"		1.50	"
6 1/4	"	6 1/2	"		2.00	"
6 3/4	"	7 1/4	"		2.50	"

STEEL BANDS.

1 to 6 in.	No. 12 to 3/16				$ .40	extra
⅜ inch	No. 8 to 10				.70	"
3/8	"	"	11	" 12	.90	"
3/4	"	"	8	" 10	.80	"
3/4	"	"	11	" 12	1.00	"
5/8	"	"	8	" 10	1.00	"
5/8	"	"	11	" 12	1.30	"
½	"	"	8	" 10	1.30	"
½	"	"	11	" 12	1.60	"

FLATS.

1 to 4 in. x ⅜ to 1½ inch 4⅛ to 6 in. x ⅜ to 1 inch					Base.	
1	to 6 inch x ¼ and 1/16 inch				$ .20	extra
1	to 6 inch x No. 12 to 3/16				.40	"
⅜	x ⅜ to ¾ inch				.40	"
⅜	x ¼ and 1/16	"			.50	"
⅜	x 1/16 inch				.60	"
¾	x ⅜ to ⅝ inch				.40	"
¾	x ½ and 1/16	"			.50	"
¾	x 3/16 inch				.70	"
⅝	x ⅜ to ½ inch				.50	"
⅝	x ¼ and 1/16	"			.70	"
⅝	x 3/16 inch				.90	"
½	x ¼ to ⅜ inch				1.10	"
½	x 3/16 inch				1.20	"
3/8	x ¼	"			1.80	"
3/8	x 3/16	"			1.90	"
2	to 4 x 1⅝ to 2 inch				.20	"
2	" 4 x 2½	"	3	"	.30	"
4⅛	" 6 x 1⅛	"	2	"	.20	"
4⅛	" 6 x 2½	"	3	"	.40	"
6½	x ⅜ to 1 inch				.20	"
6½	x 1⅛	"	2	"	.40	"
7	x ⅜	"	1	"	.30	"
7	x 1⅛	"	2	"	.40	"
7½	x ⅜	"	1	"	.50	"
7½	x 1⅛	"	2	"	.60	"
8	x ⅜	"	1	"	.40	"
8	x 1⅛	"	2	"	.60	"
8½	x ⅜	"	1	"	.70	"
8½	x 1⅛	"	2	"	.80	"
9	x ⅜	"	1	"	.60	"
9	x 1⅛	"	2	"	.80	"
10	x ⅜	"	1	"	.80	"
10	x 1⅛	"	2	"	1.00	"
12	x ⅜	"	1	"	.90	"
12	x 1⅛	"	2	"	1.10	"
14	x ⅜	"	1	"	1.10	"

6½ to 12 inch wide x ¼ and 1/16 inch thick, 2/10 extra above ⅜ thick.

OVAL STEEL.

⅞ inch to 1½ inch					$ .40	extra
¾ " and 13/16					.50	"
5/8 " " 11/16					.60	"
1/2 " " 9/16					.80	"
3/8 " " 7/16					1.00	"

HALF OVAL AND HALF ROUND STEEL.

⅞ inch to 2 inch					$ .50	extra
¾ " and 13/16					.60	"
5/8 " " 11/16					.70	"
1/2 " " 9/16					.90	"
3/8 " " 7/16					1.10	"

All sizes not enumerated to be subject to special agreement.

EXTRA FOR CUTTING ORDINARY BARS TO SPECIFIC LENGTHS.

Machine cutting, specified lengths, above 24 inches, 3/10 cts. per lb. extra.

Machine cutting, specified lengths, 12 to 24 inches, 1/10 cts. per lb. extra.

Machine cutting to specified lengths, less than 12 inches, according to contract, but not less than 5/10 cts. per lb. on each size extra.

Machine straightening and centering, 1/10 cts. per lb. extra.

Hot sawing and shearing, one-half of the above extra for cutting.

Rounds up to 5 inches diameter, over 24 feet long, and larger than 5 inches diameter, over 18 feet long, will be charged at an extra price.

STANDARD LIST OF BAR IRON EXTRAS.

ROUNDS AND SQUARES.

1 to 1 7/8 inch.		Base.
2 to 2 7/8 "	$	.20 extra.
3 to 3 1/2 "		.50 "
3 5/8 to 4 "		.80 "
3/4 to 7/8 "		.10 "
5/8 to 1 1/16 "		.20 "
1/2 to 9/16 "		.30 "
7/16 to 15/32 "		.40 "
3/8 to 13/32 "		.50 "
5/16 to 11/32 "		.70 "

FLATS.

1 1/2 to 4 by 3/8 to 1 inch.		Base.
4 1/2 to 6 by 3/8 to 1 "	$	.10 extra.
1 1/2 to 1 3/8 by 3/8 to 1 "		.10 "
1 and 1 1/16 by 3/8 to 7/8 "		.20 "
3/4 to 15/16 by 3/8 to 3/4 "		.40 "
5/8 to 11/16 by 3/8 to 5/8 "		.50 "

WEICHTS AND DIMENSIONS OF STEEL "Z" BARS.

Depth of Bar in Inches.	Length of Legs in Inches.	Thickness of Web and Legs in Inches.	Weight per foot in pounds.	Area of Section. Sq. Inches.
3	2 1 1/16	1/4	6.7	1.97
3 1/16	2 5/8	5/16	8.4	2.48
3	2 1 1/16	3/8	9.7	2.86
3 1/16	2 1/4	7/16	11.4	3.36
3	2 1 1/16	1/2	12.5	3.69
3 1/16	2 1/4	9/16	14.2	4.18
4	3 1/16	1/4	8.2	2.41
4 1/16	3 1/8	5/16	10.3	3.03
4 1/8	3 3/16	3/8	12.4	3.66
4	3 1/16	7/16	13.8	4.05
4 1/16	3 1/8	1/2	15.8	4.66
4 1/8	3 3/16	9/16	17.9	5.27
4	3 1/16	5/8	18.9	5.55
4 1/16	3 1/8	11/16	20.9	6.14
4 1/8	3 3/16	3/4	23.0	6.75
5	3 1/4	5/16	11.6	3.40
5 1/16	3 5/16	3/8	13.9	4.10
5 1/8	3 3/8	7/16	16.4	4.81
5	3 1/4	1/2	17.9	5.25
5 1/16	3 5/16	9/16	20.2	5.94
5 1/8	3 3/8	5/8	22.6	6.64
5	3 1/4	11/16	23.7	6.96
5 1/16	3 5/16	3/4	26.0	7.64
5 1/8	3 3/8	13/16	28.3	8.33
6	3 1/2	3/8	15.6	4.59
6 1/16	3 9/16	7/16	18.3	5.39
6 1/8	3 5/8	1/2	21.0	6.19
6	3 1/2	9/16	22.7	6.68
6 1/16	3 9/16	5/8	25.4	7.46
6 1/8	3 5/8	11/16	28.1	8.25
6	3 1/2	3/4	29.3	8.63
6 1/16	3 9/16	13/16	31.9	9.39
6 1/8	3 5/8	7/8	34.6	10.17

U. S. GALLONS IN ROUND TANKS.

For One Foot in depth.

Dia. of Tanks.	No. U. S. Gals.	Cubic Ft. and Area in Sq. Ft.
1 ft.	5.87	.785
1 " 1 in.	6.89	.922
1 " 2 "	8.	1.069
1 " 3 "	9.18	1.227
1 " 4 "	10.44	1.396
1 " 5 "	11.79	1.576
1 " 6 "	13.22	1.767
1 " 7 "	14.73	1.969
1 " 8 "	16.32	2.182
1 " 9 "	17.99	2.405
1 " 10 "	19.75	2.640
1 " 11 "	21.58	2.885
2 "	23.50	3.142
2 " 1 "	25.50	3.409
2 " 2 "	27.58	3.687
2 " 3 "	29.74	3.976
2 " 4 "	31.99	4.276
2 " 5 "	34.31	4 587
2 " 6 "	36.72	4.909
2 " 7 "	39.21	5.241
2 " 8 "	41.78	5.585
2 " 9 "	44.43	5.940
2 " 10 "	47.16	6.305
2 " 11 "	49.98	6.681
3 "	52.88	7.069
3 " 1 "	55.86	7.467
3 " 2 "	58.92	7.876
3 " 3 "	62.06	8.296
3 " 4 "	65.28	8.727
3 " 5 "	68.58	9.168
3 " 6 "	71.97	9.621
3 " 7 "	75.44	10.085
3 " 8 "	78.99	10.559
3 " 9 "	82.62	11.045
3 " 10 "	86.33	11.541
3 " 11 "	90.13	12.048
4 "	94.	12.566
4 " 1 "	97.96	13.095
4 " 2 "	102.	13.635
4 " 3 "	106.12	14.186
4 " 4 "	110.32	14.748
4 " 5 "	114.61	15.321
4 " 6 "	118.97	15.90
4 " 7 "	123.42	16.50
4 " 8 "	127.95	17.10
4 " 9 "	132.56	17.72
4 " 10 "	137.25	18.35
4 " 11 "	142.02	18.99
5 "	146.88	19.63
5 " 1 "	151.82	20.29
5 " 2 "	156.83	20.97
5 " 3 "	161.93	21.65
5 " 4 "	167.12	22.34
5 " 5 "	172.38	23.04
5 " 6 "	177.72	23.76
5 " 7 "	183.15	24.48
5 ft. 8 in.	188.66	25.22
5 " 9 "	194.25	25.97
5 " 10 "	199.92	26.73
5 " 11 "	205.67	27.49
6 '	211.51	28.27
6 " 3 "	229.50	30.68
6 " 6 "	248.23	33.18
6 " 9 "	267.69	35.78
7 "	287.88	38.48
7 " 3 "	308.81	41.28
7 " 6 "	330.48	44.18
7 " 9 "	352.88	47.17
8 "	376.01	50.27
8 " 3 "	399.88	53.46
8 " 6 "	424.48	56.75
8 " 9 "	449.82	60.13
9 "	475.89	63.62
9 " 3 "	502.70	67.20
9 " 6 "	530.24	70.88
9 " 9 "	558.51	74.66
10 "	587.52	78.54
10 " 3 "	617.26	82.52
10 " 6 "	640.74	86.59
10 " 9 "	678.95	90.76
11 "	710.90	95.03
11 " 3 "	743.58	99.40
11 " 6 "	776.99	103.87
11 " 9 "	811.14	108.43
12 "	846.03	113.10
12 " 3 "	881.65	117.86
12 " 6 "	918.	122.72
12 " 9 "	955.09	127.68
13 "	992.91	132.73
13 " 3 "	1031.50	137.89
13 " 6 "	1070.80	143.14
13 " 9 "	1110.80	148.49
14 "	1151.50	153.94
14 " 3 "	1193.0	159.48
14 " 6 "	1235.30	165.13
14 " 9 "	1278.20	170.87
15 "	1321.90	176.71
15 " 3 "	1366.40	182.65
15 " 6 "	1411.50	188.69
15 " 9 "	1457.40	194.83
16 "	1504.10	201.06
16 " 3 "	1551.40	207.39
16 " 6 "	1599.50	213.82
16 " 9 "	1648.40	220.35
17 "	1697.90	226.98
17 " 3 "	1748.20	233.71
17 " 6 "	1799.30	240.53
17 " 9 "	1851.10	247.45
18 "	1903.60	254.47
18 " 3 "	1956.80	261.59
18 " 6 "	2010.80	268.80
18 " 9 "	2065.50	276.12
19 ft.	2120.90	283.53
19 " 3 in.	2177.10	291.04
19 " 6 "	2234.	298.65
19 " 9 "	2291.70	306.35
20 "	2350.10	314.16
20 " 3 "	2409.20	322.06
20 " 6 "	2469.10	330.06
20 " 9 "	2529.60	338.16
21 "	2591.	346.36
21 " 3 "	2653.	354.66
21 " 6 "	2715.80	363.05
21 " 9 "	2779.30	371.54
22 "	2843.60	380.13
22 " 3 "	2908.60	388.82
22 " 6 "	2974.30	397.61
22 " 9 "	3040.80	406.49
23 "	3108.	415.48
23 " 3 "	3175.90	424.56
23 " 6 "	3244.60	433.74
23 " 9 "	3314.	443.01
24 "	3384.10	452.39
24 " 3 "	3455.	461.86
24 " 6 "	3526.60	471.44
24 " 9 "	3598.90	481.11
25 "	3672.	490.87
25 " 3 "	3745.80	500.74
25 " 6 "	3820.30	510.71
25 " 9 "	3895.60	520.77
26 "	3971.60	530.93
26 " 3 "	4048.40	541.19
26 " 6 "	4125.90	551.55
26 " 9 "	4204.10	562.
27 "	4283.	572.66
27 " 3 "	4362.70	583.21
27 " 6 "	4443.10	593.96
27 " 9 "	4524.30	604.81
28 "	4606.20	615.75
28 " 3 "	4688.80	626.80
28 " 6 "	4772.10	637.94
28 " 9 "	4856.20	649.18
29 "	4941.	660.52
29 " 3 "	5026.60	671.96
29 " 6 "	5112.90	683.49
29 " 9 "	5199.90	695.13
30 "	5287.70	706.86
30 " 3 "	5376.20	718.69
30 " 6 "	5465.40	730.62
30 " 9 "	5555.40	742.64
31 "	5646.10	754.77
31 " 3 "	5737.50	766.99
31 " 6 "	5829.70	779.31
31 " 9 "	5922.60	791.73
32 "	6016.20	804.25
32 " 3 "	6110.60	816.86
32 " 6 "	6205.70	829.58
32 " 9 "	6301.50	842.39

31½ Gallons equals 1 Barrel.

To find the capacity of Tanks greater than the largest given in the table, look in the table for a Tank of one-half of the given size and multiply its capacity by 4, or one of one-third its size and multiply its capacity by 9, etc.

NUMBER OF U. S. GALLONS IN RECTANGULAR TANKS.

For One Foot in depth.

Width of Tank.	Length of Tank.																					
	ft. 2	ft in 2 6	ft. 3	ft in 3 6	ft. 4	ft. in. 4 6	ft. 5	ft. in. 5 6	ft. 6	ft. in. 6 6	ft. 7	ft. in. 7 6	ft. 8	ft. in. 8 6	ft. 9	ft. in. 9 6	ft. 10	ft. in. 10 6	ft. 11	ft. in. 11 6	ft. 12
2 ft.	29.92	37.40	44.88	52.36	59.84	67.32	74.81	82.29	89.77	97.25	104.73	112.21	119.69	127.17	134.65	142.13	149.61	157.09	164.57	172.05	179.53
2 " 6 in.	....	46.75	56.10	65.45	74.80	84.16	93.51	102.86	112.21	121.56	130.91	140.26	149.61	158.96	168.31	177.66	187.01	196.36	205.71	215.06	224.41
3 "	....	....	67.32	78.54	89.77	100.99	112.21	123.43	134.65	145.87	157.09	168.31	179.53	190.75	202.97	213.19	224.41	235.63	246.86	258.07	269.30
3 " 6 in.	....	....	....	91.64	104.73	117.82	130.91	144.00	157.09	170.18	183.27	196.36	209.45	222.54	235.63	248.73	261.82	274.90	288.00	301.09	314.18
4 "	....	....	....	....	119.69	134.65	149.61	164.57	179.53	194.49	209.45	224.41	239.37	254.34	269.30	284.26	299.22	314.18	329.14	344.10	359.06
4 " 6 in.	....	....	....	....	.....	151.48	168.31	185.14	201.97	218.80	235.63	252.47	269.30	286.13	302.96	319.79	336.62	353.45	370.28	387.11	403.94
5 "	....	....	....	....	.....	.....	187.01	205.71	224.41	243.11	261.82	280.52	299.22	317.92	336.62	355.32	374.03	392.72	411.43	430.13	448.83
5 " 6 in.	....	....	....	....	.....	.....	.....	226.28	246.86	267.43	288.00	308.57	329.14	349.71	370.28	390.85	411.43	432.00	452.57	473.14	493.71
6 "	....	....	....	....	.....	.....	.....	.....	269.30	291.74	314.18	336.62	359.06	381.50	403.94	426.39	448.83	471.27	493.71	516.15	538.59
6 " 6 in.	....	....	....	....	.....	.....	.....	.....	.....	316.05	340.36	364.67	388.98	413.30	437.60	461.92	486.23	510.54	534.85	559.16	583.47
7 "	....	....	....	....	.....	.....	.....	.....	.....	.....	366.54	392.72	418.91	445.09	471.27	497.45	523.64	549.81	575.99	602.18	628.36
7 " 6 in.	....	...	....	....	.....	....	.....	.....	....	.....	.....	420.78	448.83	476.88	504.93	532.98	561.04	589.08	617.14	645.19	673.24
8 "	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	478.75	508.67	538.59	568.51	598.44	628.36	658.28	688.20	718.12
8 " 6 in.	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	540.46	572.25	604.05	635.84	667.63	699.42	731.21	763.00
9 "	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	605.92	639.58	673.25	706.90	740.56	774.23	807.89
9 " 6 in.	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	675.11	710.65	746.17	781.71	817.24	852.77
10 "	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	748.05	785.45	822.86	860.26	897.66
10 " 6 in.	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	824.73	864.00	903.26	942.56
11 "	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	....	....	905.14	946.27	987.43
11 " 6 in.	....	..	....	....	.....	.....	.....	.....	.....	.....	...	... ...	.....	.....	.....	.....	.....	.....	.....	989.29	1032.3
12 "	....	....	....	....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1077.2

CIRCUMFERENCES AND AREAS OF CIRCLES.

Diameter in Inches.	Circumference in Inches.	Area in Sq. Ins.	Diameter in Inches.	Circumference in Inches.	Area in Sq. Ins.
1	3.1416	.7854	64	201.06	3216.99
2	6.2832	3.1416	65	204.20	3318.31
3	9.4248	7.0686	66	207.34	3421.19
4	12.5664	12.5664	67	210.49	3525.65
5	15.7080	19.635	68	213.63	3631.68
6	18.850	28.274	69	216.77	3739.28
7	21.991	38.485	70	219.91	3848.45
8	25.133	50.266	71	223.05	3959.19
9	28.274	63.617	72	226.19	4071.50
10	31.416	78.540	73	229.34	4185.39
11	34.558	95.033	74	232.48	4300.84
12	37.699	113.1	75	235.62	4417.86
13	40.841	132.73	76	238.76	4536.46
14	43.982	153.94	77	241.90	4656.63
15	47.124	176.71	78	245.04	4778.36
16	50.265	201.06	79	248.19	4901.67
17	53.407	226.98	80	251.33	5026.55
18	56.549	254.47	81	254.47	5153.
19	59.690	283.53	82	257.61	5281.02
20	62.832	314.16	83	260.75	5410.61
21	65.973	346.36	84	263.89	5541.77
22	69.115	380.13	85	267.04	5674.50
23	72.257	415.48	86	270.18	5808.80
24	75.398	452.39	87	273.32	5944.68
25	78.540	490.87	88	276.46	6082.12
26	81.681	530.93	89	279.60	6221.14
27	84.823	572.56	90	282.74	6361.73
28	87.965	615 75	91	285.88	6503.88
29	91.106	660.52	92	289.03	6647.61
30	94.248	706.86	93	292.17	6792.91
31	97.389	754.77	94	295.31	6939.78
32	100.53	804.25	95	298.45	7088.22
33	103.67	855.30	96	301.59	7238.23
34	106.81	907.92	97	304.73	7389.81
35	109.96	962.11	98	307.88	7542.96
36	113.10	1017.88	99	311.02	7697.69
37	116.24	1075.21	100	314.16	7853.98
38	119.38	1134.11	101	317.30	8011.85
39	122.52	1194.59	102	320.44	8171.28
40	125.66	1256.64	103	323.58	8332.29
41	128.81	1320.25	104	326.73	8494.87
42	131.95	1385.44	105	329.87	8659.01
43	135.09	1452.20	106	333.01	8824.73
44	138.23	1520.53	107	336.15	8992.02
45	141.37	1590.43	108	339.29	9160.88
46	144.51	1661.90	109	342.43	9331.32
47	147.65	1734.94	110	345.58	9503.32
48	150.80	1809.56	111	348.72	9676.89
49	153.94	1885.74	112	351.86	9852.03
50	157.08	1963.50	113	355.	10028.75
51	160.22	2042.82	114	358.14	10207.03
52	163.36	2123.72	115	361.28	10386.89
53	166.50	2206.18	116	364.42	10568.32
54	169.65	2290.22	117	367.57	10751.32
55	172.79	2375.83	118	370.71	10935.88
56	175.93	2463.01	119	373.85	11122.02
57	179.07	2551.76	120	376.99	11309.73
58	182.21	2642.08	121	380.13	11499.01
59	185.35	2733.97	122	383.27	11689.87
60	188.50	2827.43	123	386.42	11882.29
61	191.64	2922.47	124	389.56	12076.28
62	194.78	3019.07	125	392.70	12271.85
63	197.92	3117.25	126	395.84	12468.98

Boiler makers usually add three times the thickness of the plate to length of iron for the take-up in rolling; also add for laps, single or double riveting.

STANDARD STEAM BOILER MEASUREMENTS

Based on 12 square feet of heating surface to a horse power.

Size.		Thickness.		Size of Dome.	Boiler with Hand Holes.				Boiler with Man Holes.			
					Tubes.		Heat. Surf. sq. ft.	Horse Power.	Tubes.		Heat. Surf. sq. ft.	Horse Power.
Dia.	Length	Shell.	Heads.		No.	Dia.			No.	Dia.		
30	6	¼	5/16	16 x 20	19	2½	106	9	.....	.....	.....	.....
30	8	¼	5/16	16 x 20	19	2½	141	12	.....	.....	.....	.....
					38	2½	256	21	.....	.....	.....	.....
36	8	¼	5/16	18 x 20	28	3	226	19	.....	.....	.....	.....
					25	3½	234	20	.....	.....	.....	.....
					38	2½	311	26	.....	.....	.....	.....
36	10	¼	5/16	18 x 20	28	3	283	24	.....	.....	.....	.....
					25	3½	292	24	.....	.....	.....	.....
42	10	¼	5/16	20 x 24	38	3	372	31	.....	.....	.....	.....
					34	3½	385	32	.....	.....	.....	.....
42	12	¼	5/16	20 x 24	38	3	446	37	.....	.....	.....	.....
					34	3½	462	39	.....	.....	.....	.....
42	14	¼	5/16	20 x 24	38	3	520	43	.....	.....	.....	.....
					34	3½	539	45	.....	.....	.....	.....
42	16	¼	5/16	20 x 24	38	3	595	50	.....	.....	.....	.....
					34	3½	616	51	.....	.....	.....	.....
44	12	¼	5/16	24 x 24	48	3	544	45	.....	.....	.....	.....
					38	3½	510	43	.....	.....	.....	.....
44	14	¼	5/16	24 x 24	48	3	635	53	.....	.....	.....	.....
					38	3½	491	41	.....	.....	.....	.....
48	12	5/16	7/16	24 x 24	58	3	647	54	50	3	572	48
					50	3½	651	54	34	3½	475	40
48	14	5/16	7/16	24 x 24	58	3	755	63	50	3	667	55
					50	3½	759	63	34	3½	547	46
48	16	5/16	7/16	24 x 24	58	3	862	72	50	3	762	64
					50	3½	867	72	34	3½	633	53
48	18	5/16	7/16	24 x 24	58	3	970	81	50	3	857	71
					50	3½	976	81	34	3½	712	59
					71	3	912	76	59	3	780	65
54	14	5/16	½	30 x 30	56	3½	851	71	48	3½	748	62
					43	4	763	64	40	4	719	60
					71	3	1042	87	59	3	891	74
54	16	5/16	½	30 x 30	56	3½	972	81	48	3½	855	71
					43	4	802	67	40	4	821	68
					71	3	1173	98	59	3	1003	84
54	18	5/16	½	30 x 30	56	3½	1094	91	48	3½	962	80
					43	4	980	82	40	4	924	77
					71	3½	907	75	56	3½	742	62
60	12	5/16	½	36 x 36	54	4	804	67	46	4	704	59
					43	4½	733	61	36	4½	634	53
					71	3½	1058	88	56	3½	865	72
60	14	5/16	½	36 x 36	54	4	938	78	46	4	821	68
					43	4½	855	71	36	4½	740	62
					71	3½	1209	101	56	3½	989	82
60	16	5/16	½	36 x 36	54	4	1073	89	46	4	939	78
					43	4½	978	82	36	4½	846	71
					71	3½	1360	113	56	3½	1113	93
60	18	5/16	½	36 x 36	54	4	1207	101	46	4	1056	88
					43	4½	1100	92	36	4½	952	79
					90	3½	1504	125	84	3½	1416	118
66	16	3/8	½	40 x 40	68	4	1324	110	56	4	1122	94
					56	4½	1239	103	46	4½	1051	88
					90	3½	1692	141	84	3½	1593	133
66	18	3/8	½	40 x 40	68	4	1489	124	56	4	1263	105
					56	4½	1394	116	46	4½	1113	93
					108	3½	1785	149	98	3½	1638	137
72	16	3/8	½	42 x 42	82	4	1575	131	72	4	1407	117
					64	4½	1407	117	60	4½	1331	111
					108	3½	2008	167	98	3½	1843	154
72	18	3/8	½	42 x 42	82	4	1772	148	72	4	1584	132
					64	4½	1583	132	60	4½	1498	125

The above table is based on rule for ascertaining Heating Surface as shown on inside of back cover of Stock List.

TABLE OF RIVETS IN 100 LBS.

Average number.

Length of Rivets.	Diameter of Rivets.								
	1-4	5-16	3-8	7-16	1-2	5-8	11-16	3-4	7-8
½	8000	5100	3200	1900	.....	.....	.....	.....	.....
⅝	7000	4500	2900	1800	.....	.....	.....	.....	.....
¾	6300	4100	2373	1476	1103	642	.....	.....	.....
⅞	5700	3700	2190	1371	1030	604	.....	.....	.....
1	5200	3400	2034	1280	968	571	400	345	.....
1⅛	4700	3100	1898	1200	910	541	382	322	208
1¼	4400	2900	1780	1129	862	514	365	311	206
1⅜	4100	2700	1675	1066	815	489	350	295	204
1½	4000	2500	1582	1010	776	462	335	284	201
1⅝	3800	2300	1498	960	740	446	324	275	199
1¾	3500	2200	1424	914	707	428	311	266	192
1⅞	3400	2000	1356	872	672	411	302	257	185
2	3000	1900	1295	834	648	395	293	249	178
2⅛	.....	.....	1238	800	623	381	285	240	172
2¼	2800	1800	1187	768	599	367	277	233	167
2⅜	.....	.....	1139	738	577	354	269	226	162
2½	2500	1700	1095	711	556	343	261	219	157
2⅝	.....	.....	1052	687	537	332	253	212	152
2¾	.....	.....	1017	662	519	321	245	206	148
2⅞	.....	.....	982	636	503	311	237	201	144
3	.....	.....	949	611	487	302	230	196	140
3¼	.....	.....	890	581	459	285	218	186	132
3½	.....	.....	837	548	433	270	208	177	126
3¾	.....	.....	791	519	411	257	198	168	120
3⅞	.....	.....	.....	.....	395	250	195	165	119
4	.....	.....	749	400	390	244	189	161	115
4¼	.....	.....	.....	.....	372	233	180	155	110
4½	.....	.....	.....	.....	355	223	172	149	105
4¾	.....	.....	.....	.....	339	214	166	143	101
5	.....	.....	.....	.....	325	205	160	136	97
5¼	.....	.....	.....	.....	312	197	154	131	94
5½	.....	.....	.....	.....	300	190	149	127	91
5¾	.....	.....	.....	.....	289	183	144	123	88
6	.....	.....	.....	.....	279	177	139	118	85
6¼	.....	.....	.....	.....	.....	171	135	114	82
6½	.....	.....	.....	.....	.....	165	131	110	79
6¾	.....	.....	.....	.....	.....	160	127	107	77
7	.....	.....	.....	.....	.....	155	123	104	75
7¼	.....	.....	.....	.....	.....	150	119	100	73
7½	.....	.....	.....	.....	.....	146	116	97	71
7¾	.....	.....	.....	.....	.....	142	113	94	69
8	.....	.....	.....	.....	.....	138	110	92	67

PRICES OF EXTRA GAUGES OF TUBES.

Extra Wire Gauges.	Diameter in Inches.									
	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4
For 1 No. per ft.	1½c.	1¾c.	2c.	2¼c.	2½c.	2¾c.	3c.	3¼c.	3½c.	4c.
" 2 Nos. "	3c.	3½c.	4c.	4½c.	5c.	5½c.	6c.	6½c.	7c.	8c.
" 3 " "	4½c.	5¼c.	6c.	6¾c.	7½c.	8¼c.	9c.	9¾c.	10½c.	12c.
" 4 " "	6c.	7c.	8c.	9c.	10c.	11c.	12c.	13c.	14c.	16c.

Beyond four numbers, price is per pound.

To calculate price, deduct the discount from the list prices of regular tubes, and add thereto the net charge for extra wire gauge, as named in table above.

PRICE LIST SHEET, TANK AND SMALL RIVETS OF ALL SIZES.

(Adopted May 10, 1899.)

Length of Rivets.	Diameter of Rivets or Size of Wire.																					
	7/16	3/8	11/32	5/16	No. 1	No. 2	No. 3	1/4	No. 4	No. 5	No. 6	3/16	No. 7	No. 8	No. 9	No. 10	No. 11	No. 12	No. 13	No. 14		
1/2 in. and longer.	15	15	15	15½	15½	15½	15½	15½	15½	16	16	16	16½	17	18	19	20	21	25	27	cts.	per lb.
15/32 " long	....	16	16	16½	16½	16½	16	16	17	17	17	17	18	18	19	20	22	24	27	30	"	" "
7/16 " "	....	....	16	16½	16½	16½	17	17	17	18	18	18	18	19	20	21	24	26	30	35	"	" "
13/32 " "	....	....	....	16½	16½	16½	17	17	18	18	18	18	18	19	20	22	26	28	33	38	"	" "
3/8 " "	....	....	....	16½	16½	16½	17	17	18	18	19	19	19	20	21	23	27	29	34	40	"	" "
11/32 " "	....	....	....	....	16½	16½	17	17	18	18	19	19	19	20	21	25	28	30	35	45	"	" "
5/16 " "	....	....	....	....	....	17	18	18	18	19	20	20	20	21	23	27	30	32	37	50	"	" "
9/32 " "	....	....	....	....	....	....	18	18	18	20	20	20	20	21	23	28	31	34	39	52	"	" "
1/4 " "	....	....	....	....	....	....	18	18	18	20	21	21	21	22	23	28	31	35	40	55	"	" "
7/32 " "	....	....	....	....	....	....	....	19	19	21	22	22	22	23	24	30	33	36	41	58	"	" "
3/16 " "	....	....	....	....	....	....	....	19	19	21	23	23	23	24	25	33	37	41	45	58	"	" "
5/32 " "	....	....	....	....	....	....	....	....	20	22	23	24	24	25	27	35	40	45	50	60	"	" "
1/8 " "	....	....	....	....	....	....	....	....	....	22	23	25	25	26	29	37	42	50	55	63	"	" "
3/32 " "	....	....	....	....	....	....	....	....	....	23	24	26	26	27	30	38	45	55	60	65	"	" "

EXTRAS—Shoulder Rivets and Pointed Rivets, 2 cts. per lb. added to list. Goods packed in 25 lb. boxes, 25 cts. per 100 lbs. net. Packed in 10 lb. and 5 lb. packages, 30 cts. per 100 lbs. net. Packed in 1 lb. packages, 50 cts. per 100 lbs. net. All sizes tinned, not specified, 2 1-2 cts. per lb. net extra. All sizes tin plated, not specified, 1 ct. per lb. net extra. All sizes coppered, not specified, 1 ct. per lb. net extra.

FLATHEAD TINNERS RIVETS.

Description.	Size of Rivets.																					
	8 oz.	10 oz.	12 oz.	14 oz.	1 lb.	1½ lb.	1½ lb.	1¾ lb.	2 lb.	2½ lb.	3 lb.	3½ lb.	4 lb.	5 lb.	6 lb.	7 lb.	8 lb.	9 lb.	10 lb.	12 lb.	14 lb.	16 lb.		
Black Rivets in Packages of 1000	20	22	24	26	27	29	33	37	42	55	60	70	76	90	108	126	144	153	175	198	231	264	cts.	per m.
" " " Bulk	38	34	31	29	26	23	22	21	20	20	19	19	18	18	17	17	17	17	16	15¼	15½	15¼	"	" lb.
Tinned " " Packages of 1000	25	28	31	35	37	42	48	55	62	80	90	105	116	140	168	197	224	243	275	318	371	424	"	" m.
" " " Bulk	48	44	41	39	36	33	32	31	30	30	29	29	28	28	27	27	27	27	26	26	26	26	"	" lb.
Plated " " Packages of 1000	22	25	27	30	31	34	39	44	50	65	72	84	92	110	132	154	176	189	215	234	287	328	"	" m.
" " " Bulk	42	38	35	33	30	27	26	25	24	24	23	23	22	22	21	21	21	21	20	20	20	20	"	" lb.

Oval or Countersunk Heads, or extra lengths, 10 cts. per 1000 in addition to above prices.

SIZES OF PLATES AND HEADS WE CAN FURNISH.

Thickness of Plates, in inches.	Width of Plates, in inches.												Diameter of Heads, in inches.
	126	120	115	110	102	90	80	72	60	50	40	30	
1-8	.....	.....	.....	.....	.....	.....	.....	.....	160	190	230	310	70
3-16	.....	.....	.....	.....	.....	.....	.....	170	200	250	300	390	90
1-4	.....	.....	.....	.....	180	216	270	300	360	360	360	410	110
5-16	.....	.....	.....	180	198	276	300	330	420	420	390	510	120
3-8	144	180	200	220	300	360	500	600	720	720	720	720	126
7-16	144	180	210	220	360	480	500	700	720	720	720	720	126
1-2	144	180	210	220	360	480	540	620	720	720	720	720	126
9-16	144	180	210	220	360	430	480	550	640	720	720	720	126
5-8	144	180	210	220	360	324	430	500	580	690	720	720	126
11-16	144	180	210	220	320	350	400	450	530	630	720	720	126
3-4	144	180	210	220	300	324	372	410	480	570	720	720	126
13-16	.....	180	210	220	260	300	366	384	440	530	670	720	126
7-8	.....	180	210	220	250	294	336	360	420	500	620	720	126
15-16	.....	180	200	210	230	260	300	330	420	460	580	720	126
1	.....	180	190	200	220	258	300	324	390	430	540	720	126
1 1-8	.....	160	170	192	210	246	288	306	366	390	480	640	126
1 1-4	.....	144	150	168	192	228	270	288	348	350	440	580	126
1 1-2	.....	120	125	130	150	160	180	210	240	290	360	480	120

ALLOWANCES FOR OVERWEIGHT
FOR
RECTANGULAR PLATES WHEN ORDERED TO GAUGE.

Adopted by the Ass'n Am. Steel Manufacturers July 17, 1896.

The weight of 1 cubic inch of rolled steel is assumed to be .2833 lbs.

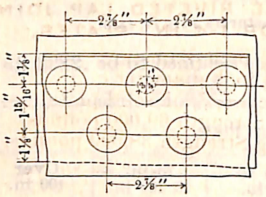
Thickness of Plate.	Width of Plate.				
	Up to 50 in.	50 in. and above.	Up to 75 in.	75 in. to 100 in.	Over 100 in.
$\frac{1}{8}$ up to $\frac{5}{16}$ in.	10 per ct.	15 per ct.	.....	.....	.....
$\frac{5}{16}$ " $\frac{5}{16}$ "	8½ "	12½ "	.....	.....	.....
$\frac{5}{16}$ " $\frac{1}{4}$ "	7 "	10 "	.....	.....	.....
$\frac{1}{4}$ inch.	.....	.....	10 per ct.	14 per ct.	18 per ct.
$\frac{5}{16}$ "	.....	.....	8 "	12 "	16 "
$\frac{3}{8}$ "	.....	.....	7 "	10 "	13 "
$\frac{7}{16}$ "	.....	.....	6 "	8 "	10 "
$\frac{1}{2}$ "	.....	.....	5 "	7 "	9 "
$\frac{9}{16}$ "	.....	.....	4½ "	6½ "	8½ "
$\frac{5}{8}$ "	.....	.....	4 "	6 "	8 "
over $\frac{5}{8}$ "	.....	.....	3½ "	5 "	6½ "

NOTICE.

We desire to call your attention to the following pages on which we show detailed drawings of the Rivet Joints, Flue Spacing, Head Bracing and Boiler Setting designed and advocated by the Hartford Steam Boiler Inspection and Insurance Co. These illustrations are all made from original drawings furnished us by the Hartford Co., and are used in all specifications that they furnish to their patrons and can be taken as a standard reference. The illustrations shown represent work that has been actually tested by the Hartford Co., and they have demonstrated by practical experience that the designs are perfectly reliable.

LONGITUDINAL RIVETED JOINTS.

Designed and advocated by Hartford Steam Boiler Inspection and Insurance Co.

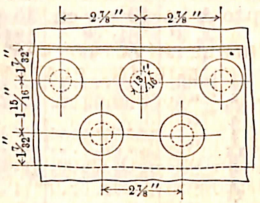


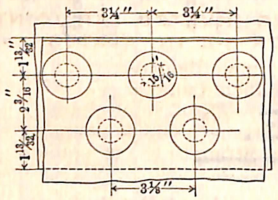
DOUBLE RIVETED LAP JOINT FOR 1-4 IN. PLATES.

Holes $\frac{3}{4}$ inch diameter.
Rivets $\frac{11}{16}$ inch diameter.
Efficiency=$\frac{74}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.

DOUBLE RIVETED LAP JOINT FOR 5-16 IN. PLATES.

Holes $\frac{13}{16}$ inch diameter.
Rivets $\frac{3}{4}$ inch diameter.
Efficiency=$\frac{72}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.



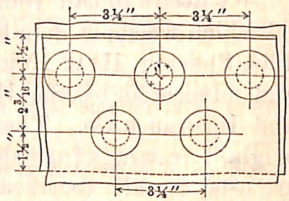


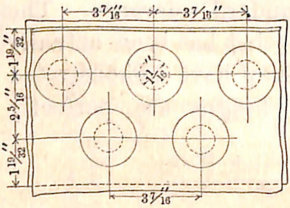
DOUBLE RIVETED LAP JOINT FOR 3-8 IN. PLATES.

Holes $\frac{15}{16}$ inch diameter.
Rivets $\frac{7}{8}$ inch diameter.
Efficiency=$\frac{70}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.

DOUBLE RIVETED LAP JOINT FOR 7-16 IN. PLATES.

Holes 1 inch diameter.
Rivets $\frac{15}{16}$ inch diameter.
Efficiency=$\frac{70}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.





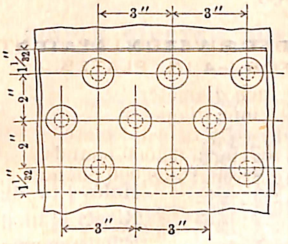
DOUBLE RIVETED LAP JOINT FOR 1-2 IN. PLATES.

Holes $1\frac{1}{16}$ inch diameter.
Rivets 1 inch diameter.
Efficiency=$\frac{70}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.

See page 104 for details of Girth Joints.

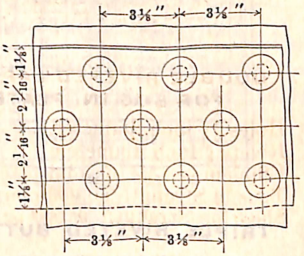
LONGITUDINAL RIVETED JOINTS—Continued.

Designed and advocated by Hartford Steam Boiler Inspection and Insurance Co.



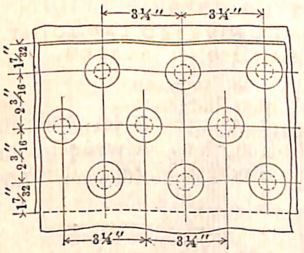
TRIPLE RIVETED LAP JOINT FOR 1-4 IN. PLATES.

Holes $\frac{11}{16}$ inch diameter.
Rivets $\frac{5}{8}$ inch diameter.
Efficiency=$\frac{77}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.



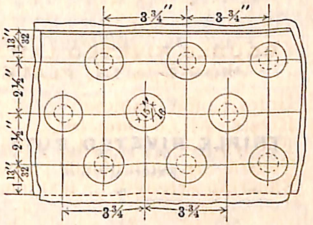
TRIPLE RIVETED LAP JOINT 5-16 IN. PLATES.

Holes $\frac{3}{4}$ inch diameter.
Rivets $\frac{11}{16}$ inch diameter.
Efficiency=$\frac{76}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.



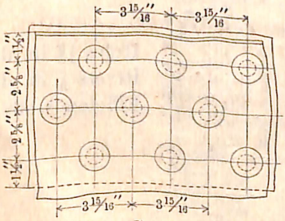
TRIPLE RIVETED LAP JOINT FOR 3-8 IN. PLATES.

Holes $\frac{13}{16}$ inch diameter.
Rivets $\frac{3}{4}$ inch diameter.
Efficiency=$\frac{75}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.



TRIPLE RIVETED LAP JOINT FOR 7-16 IN. RIVETS.

Holes $\frac{15}{16}$ inch diameter.
Rivets $\frac{7}{8}$ inch diameter.
Efficiency=$\frac{75}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.



TRIPLE RIVETED LAP JOINT FOR 1-2 IN. PLATES.

Holes 1 inch diameter.
Rivets $\frac{15}{16}$ inch diameter.
Efficiency=$\frac{75}{100}$ of solid plate.
Tensile Strength 60,000 pounds.
Shearing Strength 38,000 pounds.

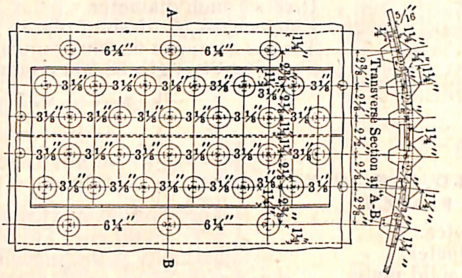
See page 104 for details of Girth Joints.

LONGITUDINAL RIVETED JOINTS.—Continued.

Designed and advocated by Hartford Steam Boiler Inspection and Insurance Co.

TRIPLE RIVETED BUTT JOINT FOR 5-16 IN. PLATES.

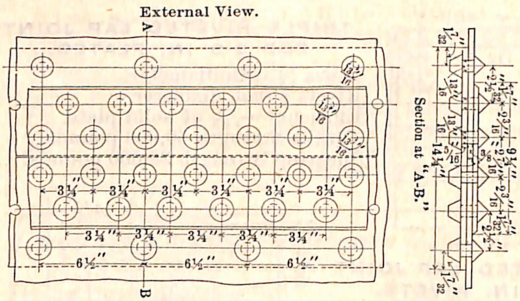
External View.



Holes ¾ in. dia.
Rivets $1\frac{1}{16}$ in. dia.
Efficiency 88%.

TRIPLE RIVETED BUTT JOINT FOR 3-8 IN. PLATES.

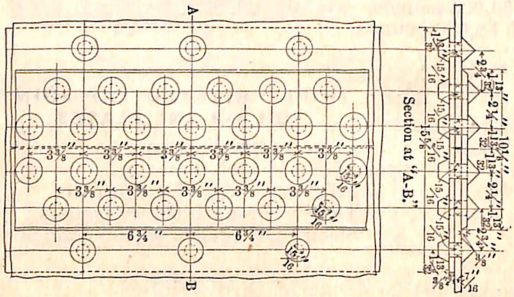
External View.



Holes $1\frac{1}{16}$ in. dia.
Rivets ¾ in. dia.
Efficiency 87.5%.

TRIPLE RIVETED BUTT JOINT FOR 7-16 IN. PLATES.

External View.



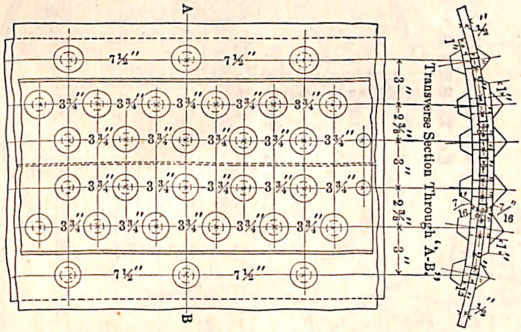
Holes $1\frac{5}{16}$ in. dia.
Rivets ⅞ in. dia.
Efficiency 86%.

LONGITUDINAL RIVETED JOINTS.—Continued.

Designed and advocated by Hartford Steam Boiler Inspection and Insurance Co.

TRIPLE RIVETED BUTT JOINT FOR 1-2 IN. PLATES.

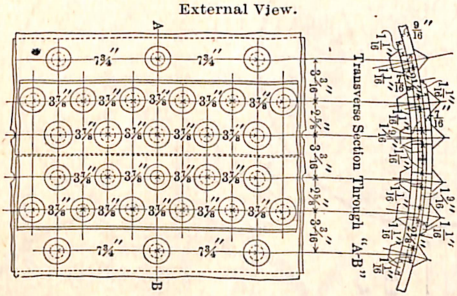
External View.



Holes 1 in. dia.
Rivets $\frac{15}{16}$ in. dia.
Efficiency 86.6%.

TRIPLE RIVETED BUTT JOINT FOR 9-16 IN. PLATES.

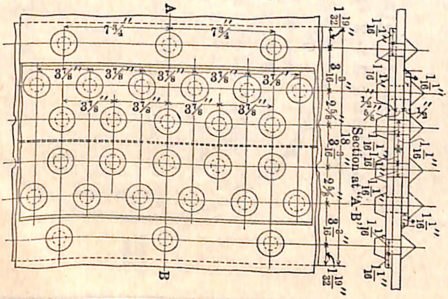
External View.



Holes $1\frac{1}{16}$ in. dia.
Rivets 1 in. dia.
Efficiency 85.4%.

TRIPLE RIVETED BUTT JOINT FOR 5-8 IN. PLATES.

External View.



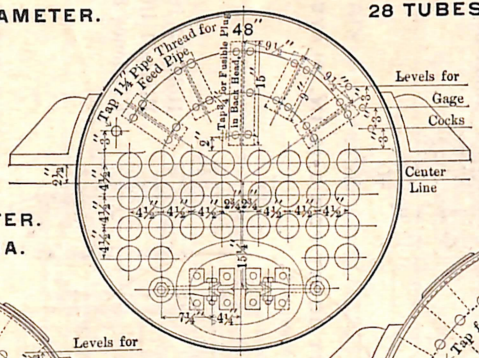
Holes $1\frac{1}{16}$ in. dia.
Rivets 1 in. dia.
Efficiency 84%.

FLUE SPACING AND HEAD BRACING.

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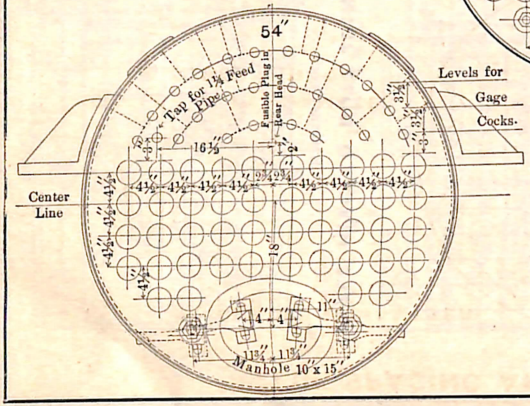
BOILER 48 IN. DIAMETER.

28 TUBES 3 1-2 IN. DIAMETER.



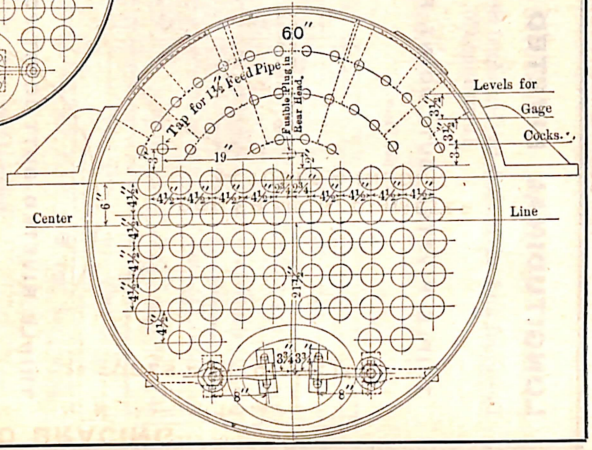
BOILER 54 IN. DIAMETER.

44 TUBES 3 1-2 IN. DIA.



BOILER 60 IN. DIAMETER.

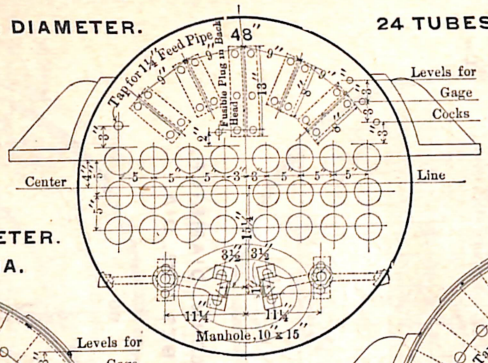
54 TUBES 3 1-2 IN. DIA.



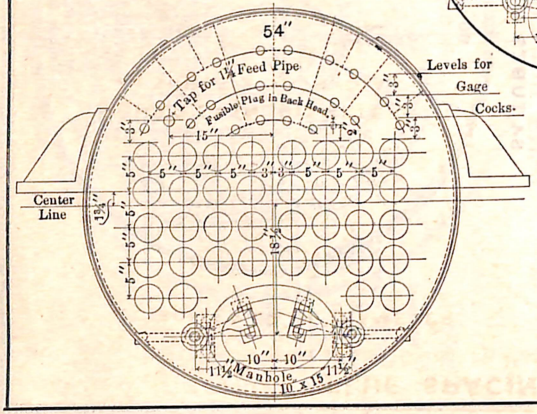
FLUE SPACING AND HEAD BRACING—Continued.

Designed and advocated by Hartford Steam Boiler Inspection and Insurance Co.

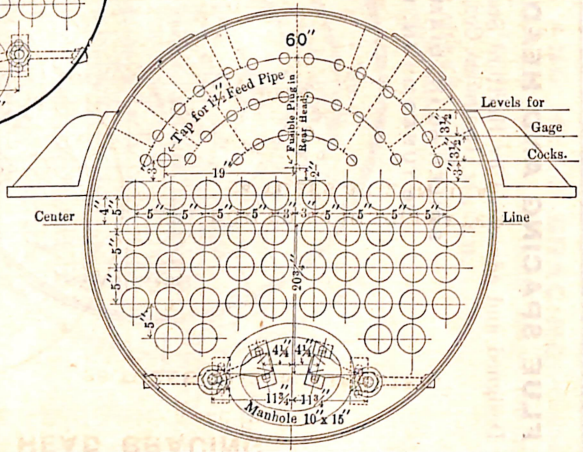
BOILER 48 IN. DIAMETER. 24 TUBES 4 IN. DIAMETER.



BOILER 54 IN. DIAMETER. 36 TUBES 4 IN. DIA.



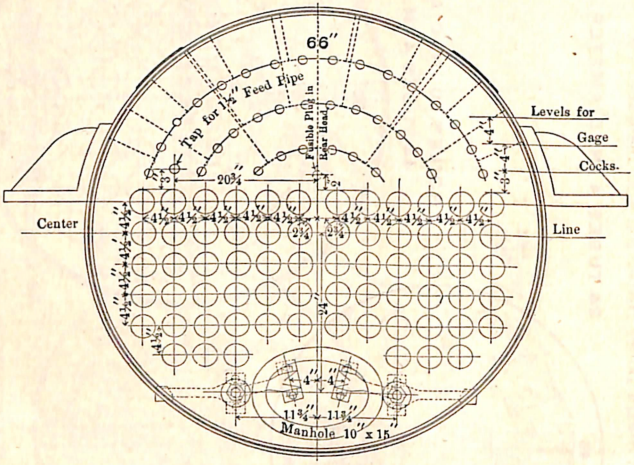
BOILER 60 IN. DIAMETER. 44 TUBES 4 IN. DIA.



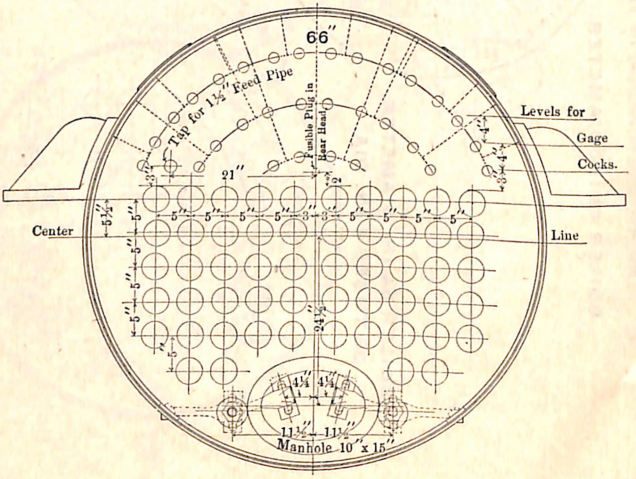
FLUE SPACING AND HEAD BRACING.— Contd.

Designed and advocated by Hartford Steam Boiler Inspection and Insurance Co.

BOILER 66 IN. DIAMETER
66 TUBES 3½ IN. DIA.



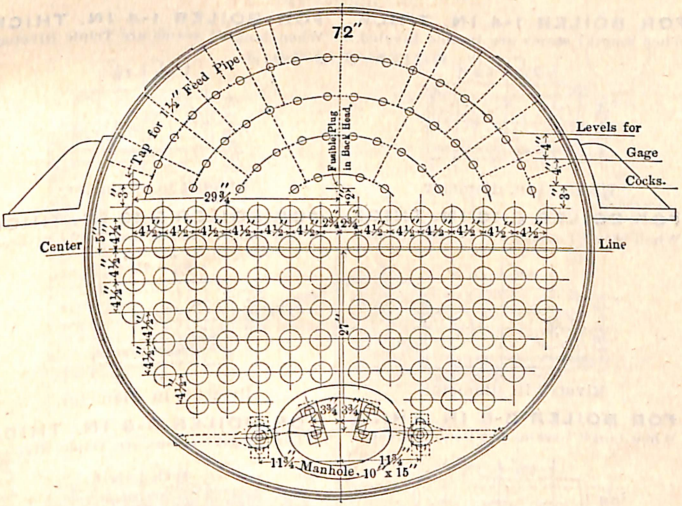
BOILER 66 IN. DIAMETER.
54 TUBES 4 IN. DIA.



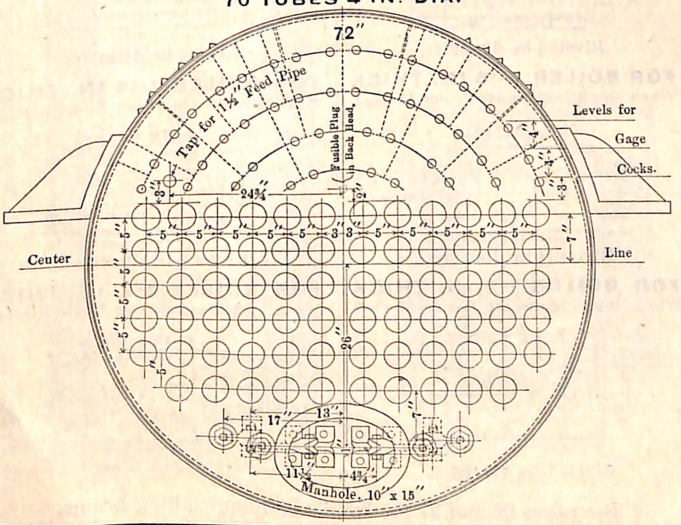
FLUE SPACING AND HEAD BRACING—Contd.

Designed and advocated by Hartford Steam Boiler Inspection and Insurance Co.

BOILER 72 IN. DIAMETER. 86 TUBES 3½ IN. DIA.



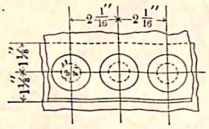
BOILER 72 IN. DIAMETER. 70 TUBES 4 IN. DIA.



SINGLE RIVETED GIRTH JOINTS.

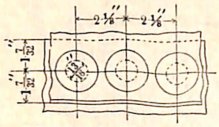
Designed and advocated by Hartford Steam Boiler Inspection and Insurance Co.

FOR BOILER 1-4 IN. THICK
When longit'l seams are Double Riveted.



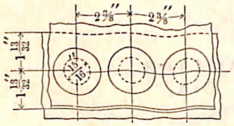
Rivets 1/16 in. diameter.

FOR BOILER 5-16 IN. THICK
When longit'l seams are Double Riveted.



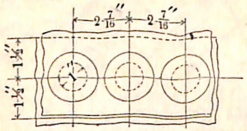
Rivets 3/4 in. diameter.

FOR BOILER 3-8 IN. THICK
When longit'l seams are Double Riveted.



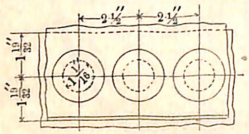
Rivets 7/8 in. diameter.

FOR BOILER 7-16 IN. THICK
When longit'l seams are Double Riveted.



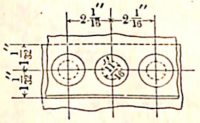
Rivets 1 5/8 in. diameter.

FOR BOILER 1-2 IN. THICK
When longit'l seams are Double Riveted.



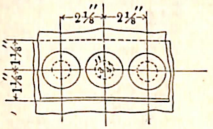
Rivets 1 in. diameter.

FOR BOILER 1-4 IN. THICK
When longit'l seams are Triple Riveted.



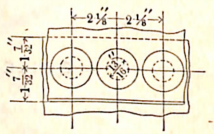
Rivets 5/8 in. diameter.

FOR BOILER 5-16 IN. THICK
When longit'l seams are Triple Riveted.



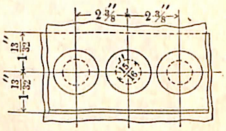
Rivets 1 1/8 in. diameter.

FOR BOILER 3-8 IN. THICK
When longit'l seams are Triple Riveted.



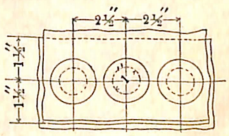
Rivets 3/4 in. diameter.

FOR BOILER 7-16 IN. THICK
When longit'l seams are Triple Riveted.



Rivets 7/8 in. diameter.

FOR BOILER 1-2 IN. THICK
When longit'l seams are Triple Riveted.



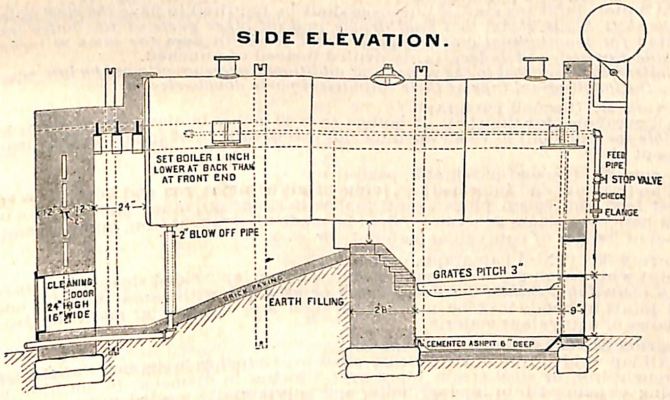
Rivets 1 5/8 in. diameter.

See pages 96 and 97 for details of Longitudinal Seams.

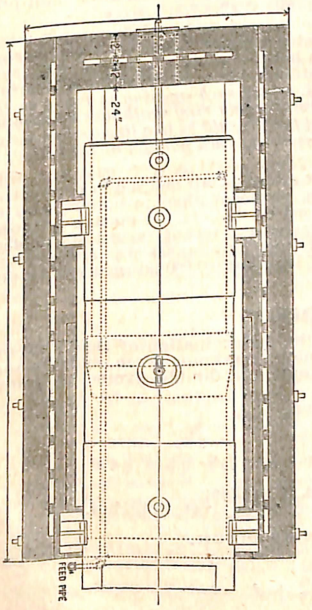
HORIZONTAL BOILER SETTING.

Designed and advocated by Hartford Steam Boiler Inspection and Inspection Co.

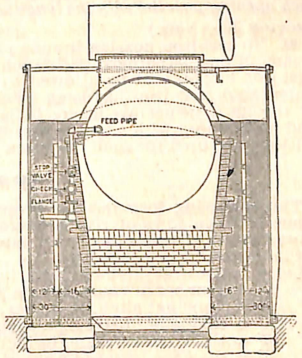
SIDE ELEVATION.



PLAN VIEW: SECTION THROUGH CENTER OF BOILER



SECTION THROUGH FURNACE.



U. S. GOVERNMENT RULES.

The following pages show some of the recent changes made by the Board of Supervising Inspectors of Steam Vessels assembled at Washington, D. C., in January, 1899, and taking effect July 1, 1899:

SECTION 2. (Second paragraph.)
All boilers built for marine purposes shall be required to have *the rivet holes in the shell, heads, steam and mud drums, and all other parts of the boiler (excepting for longitudinal and circumferential seams in flues for same 20 inches outside diameter and under)*, fairly drilled instead of punched.
Boilers, to be entitled to the 20 per cent additional pressure allowed by law, must have the longitudinal laps of their cylindrical parts double-riveted.

SECTION 21. (Second paragraph.)
All manholes for the shell of boilers over 40 inches in diameter, *where practicable for use*, shall have an opening not less than 11 by 15 inches in the clear, except * * *

SECTION 38. (Second paragraph, page 41.)
The terminal and intermediate joints of all wrought iron and homogeneous steel feed and steam pipes over *3* inches in diameter, other than on pipe or coil boilers or steam generators, shall be made of wrought iron, homogeneous steel or flanges *of* equivalent material; * * *

SECTION 38. (Third paragraph, page 41.)
But where such pipes are made of extra heavy lap-welded steam pipe, *up to and including 5 inches*, the flanges may be attached with screw threads; and all joints in bends may be made with good and substantial malleable-iron elbows or equivalent material.

SECTION 38. (Last paragraph, page 41.)
All lap-welded iron or steel steam pipes over 5 inches in diameter or riveted wrought-iron or steel steam pipes over 5 inches in diameter, in addition to being expanded into tapered holes, and substantially beaded into recess in face of flanges, shall be substantially and firmly riveted with good and substantial rivets through the hubs of such flanges; and no such hubs shall project from such flanges less than 2 inches in any case.

SECTION 38. (Second paragraph, page 42.)
When holes exceeding 6 inches in diameter are cut in boilers for pipe connections, man and hand hole plates, such holes shall be reinforced, either on the inside or outside of boiler, with reinforcing plates, which shall be securely riveted to the boiler, *in flat surfaces; and, where such opening is made in the circumferential plates of such boilers, the reinforcing ring shall have a sectional area of at least one-half the area of material there would be in a line drawn across such opening parallel with the longitudinal seams of such portion of the boiler;*

SECTION 40. (New.)
40. No cast-iron nozzles, branch pipes or elbows shall be used in connecting steam drums, superheaters, branch pipes, or steam pipes to boilers, and no cast-iron flanges will be allowed to be used on boilers for marine purposes unless such cast iron has been officially tested and test on record in the office of the local inspectors where boiler with such appliances was constructed, and no cast-iron with a tensile strength of less than 30,000 pounds will be permitted to be used for such purposes.

APPENDIX.

The following formulas are given for the determination of the pitch, distance between rows of rivets, diagonal pitch, maximum pitch, and distance from centers of rivets to edge of lap of single and double riveted lap joints, for both iron and steel boilers:

Let p = greatest pitch of rivets, in inches;
n = number of rivets, in one pitch;
pd= diagonal pitch, in inches;
d = diameter of rivets, in inches;
T = thickness of plate, in inches;
V = distance between rows of rivets, in inches;
E = distance from edge of plate to center of rivet, in inches.

TO DETERMINE THE PITCH.

Iron plates and iron rivets:

$$p = \frac{d^2 \times .7854 \times n}{T} + d.$$

U. S. GOVERNMENT RULES—Continued.

Example: First, for single-riveted joint—
Given, thickness of plate (T)=$\frac{1}{2}$ inch, diameter of rivet (d)=$\frac{7}{8}$ inch. In this case, n=1. Required, the pitch.
Substituting in formula, and performing operation indicated,

$$\text{Pitch}=\frac{(\frac{7}{8})^2\times.7854\times1}{\frac{1}{2}}+\frac{7}{8}=2.077 \text{ inches.}$$

For double-riveted joint—
Given, t=$\frac{1}{2}$ inch, and d=$\frac{13}{16}$ inch. In this case, n=2. Then—

$$\text{Pitch}=\frac{(\frac{13}{16})^2\times.7854\times2}{\frac{1}{2}}+\frac{13}{16}=2.886 \text{ inches.}$$

For *steel* plates and steel rivets:

$$p=\frac{23\times d^2\times n}{28\times T}+d.$$

Example, for single-riveted joint: Given, thickness of plate=$\frac{1}{2}$ inch, diameter of rivet=$\frac{15}{16}$ inch. In this case, n=1.

$$\text{Pitch}=\frac{23\times(\frac{15}{16})^2\times.7854\times1}{28\times\frac{1}{2}}+\frac{15}{16}=2.071 \text{ inches.}$$

Example, for double-riveted joint: Given, thickness of plate=$\frac{1}{2}$ inch, diameter of rivet=$\frac{7}{8}$ inch. n=2. Then—

$$\text{Pitch}=\frac{23\times(\frac{7}{8})^2\times.7854\times2}{28\times\frac{1}{2}}+\frac{7}{8}=2.85 \text{ inches.}$$

FOR DISTANCE FROM CENTER OF RIVET TO EDGE OF LAP.

$$E=\frac{3\times d}{2}.$$

Example: Given, diameter of rivet (d)=$\frac{7}{8}$ inch; required, the distance from center of rivet to edge of plate.

$$E=\frac{3\times\frac{7}{8}}{2}=1.312 \text{ inches,}$$

for single or double riveted lap joint.

FOR DISTANCE BETWEEN ROWS OF RIVETS.

The distance between lines of centers of rows of rivets for double, chain-riveted joints (V) should not be less than twice the diameter of rivet, but it is more desirable that V should not be less than $\frac{4d+1}{2}$.

Example under latter formula: Given, diameter of rivet=$\frac{7}{8}$ inch, then—

$$V=\frac{(4\times\frac{7}{8})+1}{2}=2.25 \text{ inches.}$$

For ordinary, double, zigzag-riveted joints,

$$V=\sqrt{\frac{(11p+4d)\ (p+4d)}{10}}.$$

Example; Given, pitch=2.85 inches, and diameter of rivet=$\frac{7}{8}$ inch, then—

$$V=\sqrt{\frac{(11\times2.85+4\times\frac{7}{8})\ (2.85+4\times\frac{7}{8})}{10}}=1.487 \text{ inches.}$$

DIAGONAL PITCH.

For double, zigzag-riveted lap joint. Iron and steel.

$$p^{\text{d}}=\frac{6p\times4d}{10}.$$

Example: Given, pitch=2.85 inches, and d=$\frac{7}{8}$ inch, then—

$$p^{\text{d}}=\frac{(6\times2.85)+(4\times\frac{7}{8})}{10}=2.06 \text{ inches.}$$

MAXIMUM PITCHES FOR RIVETED LAP JOINTS.

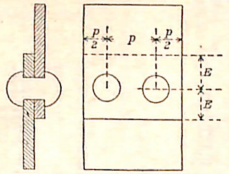
For single-riveted lap joints, maximum pitch=$(1.31\times T)+1\frac{5}{8}$.
For double-riveted lap joints, maximum pitch=$(2.62\times T)+1\frac{5}{8}$.
Example: Given a thickness of plate=$\frac{1}{2}$ inch, required, the maximum pitch allowable.
For single-riveted lap joint, maximum pitch=$(1.31\times\frac{1}{2})+1\frac{5}{8}=2.28$ inches.
For double-riveted lap joint, maximum pitch=$(2.62\times\frac{1}{2})+1\frac{5}{8}=2.955$ inches.

The following tables may be taken for use in single and double riveted joints:

U. S. GOVERNMENT RULES—Continued.

IRON PLATES AND IRON RIVETS.

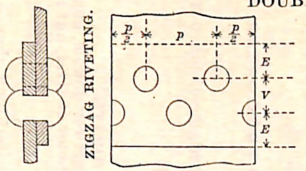
SINGLE-RIVETED LAP JOINTS.



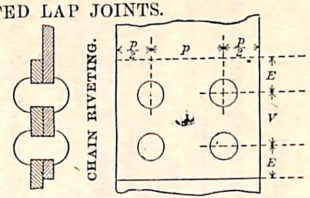
Thickness of Plates.	Diameter of Rivets.	Pitch of Rivets.	Center of Rivets to edge of Plates.
T	*d*	*p*	*E*
1/4	5/8	1.524	.937
9/32	21/32	1.600	.984
5/16	11/16	1.676	1.031
11/32	23/32	1.753	1.078
3/8	3/4	1.829	1.125
13/32	25/32	1.905	1.171
7/16	13/16	1.981	1.218
15/32	27/32	2.036	1.265
1/2	7/8	2.077	1.312
17/32	29/32	2.120	1.359
9/16	15/16	2.164	1.406
19/32	31/32	2.210	1.453
5/8	1	2.256	1.500
21/32	1 1/32	2.304	1.546
11/16	1 1/16	2.352	1.593
23/32	1 3/32	2.400	1.640
3/4	1 1/8	2.450	1.687
25/32	1 5/32	2.500	1.734
13/16	1 3/16	2.550	1.781
27/32	1 7/32	2.601	1.828
7/8	1 1/4	2.652	1.875
29/32	1 9/32	2.703	1.921
15/16	1 5/16	2.755	1.968

DOUBLE-RIVETED LAP JOINTS.

ZIGZAG RIVETING.



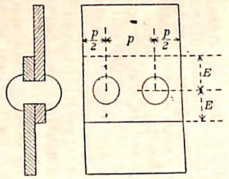
CHAIN RIVETING.



Thickness of Plates.	Diameter of Rivets.	Pitch of Rivets.	Center of Rivets to edge of Plates.	Distance between Rows of Rivets.	
				Zigzag Riveting.	Chain Riveting.
T	*d*	*p*	*E*	*V*	*V*
5/16	5/8	2.272	.937	1.145	1.750
11/32	11/16	2.386	.984	1.202	1.812
3/8	3/4	2.500	1.031	1.260	1.875
13/32	13/16	2.613	1.078	1.317	1.937
7/16	7/8	2.727	1.125	1.374	2.000
15/32	15/16	2.826	1.171	1.426	2.062
1/2	31/32	2.886	1.218	1.465	2.125
17/32	1 1/32	2.948	1.265	1.504	2.187
9/16	1 1/16	3.013	1.312	1.544	2.250
19/32	1 3/32	3.079	1.359	1.585	2.312
5/8	1 1/8	3.146	1.406	1.626	2.375
21/32	1 5/32	3.215	1.453	1.667	2.437
11/16	1	3.284	1.500	1.709	2.500
23/32	1 1/32	3.355	1.546	1.751	2.562
3/4	1 1/16	3.426	1.593	1.794	2.625
25/32	1 3/32	3.498	1.640	1.836	2.687
13/16	1 1/8	3.571	1.687	1.879	2.750
27/32	1 5/32	3.645	1.734	1.923	2.812
7/8	1 3/16	3.718	1.781	1.966	2.875
29/32	1 7/32	3.793	1.828	2.009	2.937
15/16	1 1/4	3.867	1.875	2.053	3.000
31/32	1 9/32	3.942	1.921	2.096	3.062
1	1 5/16	4.018	1.968	2.140	3.125

STEEL PLATES AND STEEL RIVETS.

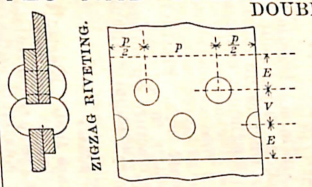
SINGLE-RIVETED LAP JOINTS.



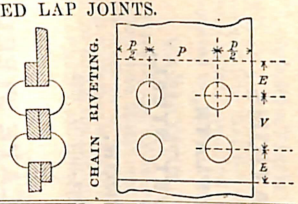
Thickness of Plates.	Diameter of Rivets.	Pitch of Rivets.	Center of Rivets to edge of Plates.
T	d	p	E
1/4	11/16	1.562	1.031
9/32	11/16	1.633	1.078
5/16	3/4	1.704	1.125
11/32	3/4	1.775	1.171
3/8	13/16	1.846	1.218
13/32	13/16	1.917	1.265
7/16	7/8	1.988	1.312
15/32	7/8	2.036	1.359
1/2	15/16	2.071	1.406
17/32	15/16	2.108	1.453
9/16	1	2.146	1.500
19/32	1 1/32	2.186	1.546
5/8	1 1/32	2.227	1.593
21/32	1 1/16	2.269	1.640
11/16	1 1/16	2.312	1.687
23/32	1 1/8	2.356	1.734
3/4	1 1/8	2.400	1.781
25/32	1 3/16	2.445	1.828
13/16	1 3/16	2.500	1.875
27/32	1 1/4	2.562	1.921
7/8	1 1/4	2.625	1.968
29/32	1 5/16	2.687	2.015
15/16	1 5/16	2.750	2.062

DOUBLE-RIVETED LAP JOINTS.

ZIGZAG RIVETING.



CHAIN RIVETING.



Thickness of Plates.	Diameter of Rivets.	Pitch of Rivets.	Center of Rivets to edge of Plates.	Distance between Rows of Rivets.	
				Zigzag Riveting.	Chain Riveting.
T	d	p	E	V	V
5/16	11/16	2.291	1.031	1.187	1.875
11/32	11/16	2.395	1.078	1.240	1.937
3/8	3/4	2.500	1.125	1.295	2.000
13/32	3/4	2.604	1.171	1.349	2.062
7/16	13/16	2.708	1.218	1.403	2.125
15/32	13/16	2.803	1.265	1.453	2.187
1/2	7/8	2.850	1.312	1.487	2.250
17/32	7/8	2.900	1.359	1.522	2.312
9/16	15/16	2.953	1.406	1.558	2.375
19/32	15/16	3.008	1.453	1.595	2.437
5/8	1	3.064	1.500	1.631	2.500
21/32	1 1/32	3.122	1.546	1.669	2.562
11/16	1 1/16	3.181	1.593	1.707	2.625
23/32	1 1/16	3.241	1.640	1.745	2.687
3/4	1 1/8	3.302	1.687	1.784	2.750
25/32	1 1/8	3.364	1.734	1.823	2.812
13/16	1 3/16	3.427	1.781	1.863	2.875
27/32	1 3/16	3.490	1.828	1.902	2.937
7/8	1 1/4	3.554	1.875	1.942	3.000
29/32	1 9/32	3.618	1.921	1.981	3.062
15/16	1 5/16	3.683	1.968	2.021	3.125
31/32	1 11/32	3.748	2.015	2.061	3.187
1	1 3/8	3.814	2.062	2.102	3.250

STANDARD SPECIFICATIONS

FOR

SPECIAL OPEN-HEARTH PLATE,

STRUCTURAL, PIN AND RIVET STEEL,

AND

STRUCTURAL CAST IRON.

Adopted by the Ass'n Am. Steel Manufacturers July 17, 1896.

SPECIAL OPEN HEARTH PLATE STEEL.

Steel shall be of four grades—**EXTRA SOFT, FIRE BOX, FLANGE OR BOILER,** and **BOILER RIVET STEEL.**

EXTRA SOFT STEEL.

Ultimate strength, 45,000 to 55,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Elongation, 28 per cent. Cold and Quench bends, 180 degrees flat on itself, without fracture on outside of bent portion. Maximum Phosphorus, .04 per cent.; Maximum Sulphur, .04 per cent.

FIRE BOX STEEL.

Ultimate strength, 52,000 to 62,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Elongation, 26 per cent. Cold and Quench bends, 180 degrees flat on itself, without fracture on outside of bent portion. Maximum Phosphorus, .04 per cent.; Maximum Sulphur, .04 per cent.

FLANGE OR BOILER STEEL.

Ultimate strength, 52,000 to 62,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Elongation, 25 per cent. Cold and Quench bends, 180 degrees flat on itself, without fracture on outside of bent portion. Maximum Phosphorus, .06 per cent.; Maximum Sulphur, .04 per cent.

BOILER RIVET STEEL.

Steel for boiler rivets shall be made the same as Extra Soft Steel specified above.

TEST PIECES.

All tests and inspections shall be made at place of manufacture prior to shipment.

The tensile strength, limit of elasticity and ductility shall be determined from a standard test piece cut from the finished material. The standard shape of the test piece for sheared plates shall be as shown on page 111. On tests cut from other material the test piece may be either the same as for plates, or it may be planed or turned parallel throughout its entire length. The elongation shall be measured on an original length of eight inches, except when the thickness of the finished material is $\frac{5}{16}$ inch or less, in which case the elongation shall be measured in a length equal to sixteen times the thickness; and except in rounds of $\frac{5}{8}$ inch or less in diameter, in which case the elongation shall be measured in a length equal to eight times the diameter of section tested. Four test pieces shall be taken from each melt of finished material; two for tension and two for bending.

Material which is to be used without annealing or further treatment is to be tested in the condition in which it comes from the rolls. When material is to be annealed or otherwise treated before use, the specimen representing such material is to be similarly treated before testing.

Every finished piece of steel shall be stamped with the melt number. Rivet steel may be shipped in bundles securely wired together, with the melt number on a metal tag attached.

All plates shall be free from surface defects and have a workmanlike finish.

VARIATION WHEN ORDERED TO GAUGE.

For all plates ordered to gauge, there will be permitted an average excess of weight over that corresponding to the dimensions on the order equal in amount to that specified in the table shown on page 95, provided no plate shall be rejected for light gauge measuring .01" or less below the ordered thickness.

VARIATION WHEN ORDERED TO WEIGHT.

Plates 12½ lbs. or heavier, when ordered to weight, shall not average more variation than 2½ per cent., either above or below the theoretical weight.

Plates from 10 to 12½ lbs., when ordered to weight, shall not average a greater variation than the following: Up to 75 inches wide, 2½ per cent. either above or below the theoretical weight; 75 inches and over, 5 per cent. either above or below the theoretical weight.

STRUCTURAL STEEL.

Steel may be made by either the Open-Hearth or Bessemer process, and shall be of three grades, **RIVET, SOFT** and **MEDIUM.**

RIVET STEEL.

Ultimate strength, 48,000 to 58,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Elongation, 26 per cent. Bending test, 180 degrees flat on itself, without fracture on outside of bent portion.

SOFT STEEL.

Ultimate strength, 52,000 to 62,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength. Elongation, 25 per cent. Bending test, 180 degrees flat on itself, without fracture on outside of bent portion.

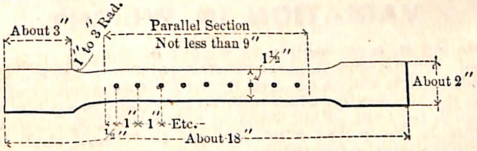
MEDIUM STEEL.

Ultimate strength, 60,000 to 70,000 pounds per square inch. Elastic limit, not less than one-half the ultimate strength, Elongation, 22 per cent. Bending test, 180 degrees to a diameter equal to thickness of piece tested, without fracture on outside of bent portion.

TEST PIECES.

All tests and inspections shall be made at place of manufacture prior to shipment.

The tensile strength, limit of elasticity and ductility shall be determined from a standard test piece cut from the finished material. The standard shape of the test piece for sheared plates shall be as shown by the following sketch:



Pieces to be of same thickness as the plate.

On tests cut from other material the test piece may be either the same as for plates, or it may be planed or turned parallel throughout its entire length. The elongation shall be measured on an original length of 8 inches, except when the thickness of the finished material is $\frac{5}{8}$ inch or less, in which case the elongation shall be measured in a length equal to sixteen times the thickness; and except in rounds of $\frac{5}{8}$ inch or less in diameter, in which case the elongation shall be measured in a length equal to eight times the diameter of section tested. Two test pieces shall be taken from each melt or blow of finished material, one for tension and one for bending.

Material which is to be used without annealing or further treatment is to be tested in the condition in which it comes from the rolls. When material is to be annealed or otherwise treated before use, the specimen representing such material is to be similarly treated before testing.

Every finished piece of steel shall be stamped with the blow or melt number, and steel for pins shall have the blow or melt number stamped on the

ends. Rivet and lacing steel, and small pieces for pin plates and stiffeners, may be shipped in bundles securely wired together, with the blow or melt number on a metal tag attached.

Finished bars must be free from injurious seams, flaws or cracks, and have a workmanlike finish.

CHEMICAL PROPERTIES.

Steel for RAILWAY BRIDGES — Maximum Phosphorus, .08 per cent.

Steel for BUILDINGS, TRAIN SHEDS, HIGHWAY BRIDGES, and similar structures. } Maximum Phosphorus, .10 per cent.

PIN STEEL.

Pins made from either of the above mentioned grades of steel shall, on specimen test pieces cut at a depth of one inch from surface of finished material, fill the physical requirements of the grade of steel from which they are rolled, for ultimate strength, elastic limit, and bending, but the required elongation shall be decreased 5 per cent.

EYE-BAR STEEL.

Eye-bar material, 1½ inches and less in thickness, made of either of the above-mentioned grades of steel, shall, on test pieces cut from finished material, fill the requirements of the grade of steel from which it is rolled. For thicknesses greater than 1½ inches, there will be allowed a reduction in the percentage of elongation of 1 per cent. for each ½ of an inch increase of thickness, to a minimum of 20 per cent. for medium steel and 22 per cent. for soft steel.

FULL SIZE TEST OF STEEL EYE-BARS.

Full size test of steel eye-bars shall be required to show not less than 10 per cent. elongation in the body of the bar, and tensile strength not more than 5,000 pounds below the minimum tensile strength required in specimen tests of the grade of steel from which they are rolled. The bars will be required to break in the body, but should a bar break in the head, but develop 10 per cent. elongation and the ultimate strength specified, it shall not be cause for rejection, provided not more than one-third of the total number of bars tested break in the head; otherwise, the entire lot will be rejected.

VARIATION IN WEIGHT.

The variation in cross-section or weight of more than 2½ per cent. from that specified will be sufficient cause for rejection, except in the case of sheared plates, which will be covered by the following permissible variations.

Plates 12½ lbs. or heavier, when ordered to weight, shall not average more variation than 2½ per cent. either above or below the theoretical weight.

Plates from 10 to 12½ lbs., when ordered to weight, shall not average a greater variation than the following:

Up to 75 inches wide, 2½ per cent. either above or below the theoretical weight.

75 inches and over, 5 per cent. either above or below the theoretical weight.

For all plates ordered to gauge there will be permitted an average excess of weight over that corresponding to the dimensions on the order equal in amount to that specified in the table shown on page 95.

STRUCTURAL CAST IRON.

Except where chilled iron is specified, all castings shall be tough gray iron, free from injurious cold-shuts or blow-holes, true to pattern, and of a workmanlike finish. Sample pieces, one inch square, cast from the same heat of metal in sand moulds, shall be capable of sustaining on a clear span of 4 feet 8 inches, a central load of 500 pounds when tested in the rough bar.

USEFUL INFORMATION.

To find circumference of a circle multiply diameter by 3.1416.

To find diameter of a circle multiply circumference by .31831.

To find area of a circle multiply square of diameter by .7854.

To find surface of a ball multiply square of diameter by 3.1416.

To find side of an equal square multiply diameter by .8862.

To find cubic inches in a ball multiply cube of diameter by .5236.

Doubling the diameter of a pipe increases its capacity four times.

A gallon of water (U. S. standard) weighs 8⅓ lbs. and contains 231 cubic inches.

A cubic foot of water contains 7½ gallons, 1728 cubic inches, and weighs 62½ lbs.

To find the pressure in pounds per square inch of a column of water multiply the height of the column in feet by .434.

Steam rising from water at its boiling point (212 degrees) has a pressure equal to the atmosphere (14.7 lbs. to the square inch).

A standard horse power: The evaporation of 30 lbs. of water per hour from a feed water temperature of 100° F. into steam at 70 lbs. gauge pressure.

To find capacity of tanks any size; given dimensions of a cylinder in inches, to find its capacity in U. S. gallons: Square the diameter, multiply by the length and by .0034.

To ascertain heating surface in tubular boilers multiply ⅔ the circumference of boiler by length of boiler in inches and add to it the area of all the tubes.

One-sixth of tensile strength of plate multiplied by thickness of plate and divided by one-half the diameter of boiler gives safe working pressure for tubular boilers. For marine boilers add 20 per cent. for drilled holes.

To find the amount of air that can be produced by different size air cylinders: Find the area of the cylinder and multiply that by the stroke; then multiply result by 2 if it is a Straight Line Compressor; by 4 if a Duplex Compressor; or by 2 if a Compound Duplex Compressor. Divide this result by 1728, which will give amount of air per stroke and then multiply by number of strokes per minute.

SCULLY
STEEL AND IRON CO.

DEALERS IN

BOILER, TANK AND SHEET STEEL,
BOILER, TANK AND SHEET IRON,
SHIP AND UNIVERSAL PLATE,
GALVANIZED STEEL SHEETS,
LAP-WELDED STEEL AND IRON BOILER TUBES,
SPECIAL LOCOMOTIVE TUBES,
BOILER AND SHEET IRON RIVETS,
BRIDGE AND STRUCTURAL RIVETS,
BEAMS, CHANNELS, ANGLES, TEES AND "Z" BARS,
TURNED STEEL SHAFTING,
TOOL STEEL,
PRESSED BRICK SIDING,
CORRUGATED AND STANDING SEAM ROOFING,
ROLL AND CAP, AND "V" CRIMP ROOFING,
BEADED SHEETS, STEEL WEATHERBOARDING,
PERFORATED METALS,
WIRE CLOTH,
GALVANIZED STEEL WIRE STRAND,
SCREW PUNCHES,
ROLLER AND SPRING TUBE EXPANDERS,
PRESSED STEEL BOILER BRACES,
PRESSED STEEL PIPE FLANGES,
PRESSED STEEL BOILER LUGS AND HANGERS,
PRESSED STEEL MAN-HOLE CRABS,
PATCH BOLTS, CUT STAYBOLTS, TAPS, ETC.,
PORTABLE RIVET FORGES,
BOILERMAKERS HAND TOOLS,
BOILERMAKERS HAND AND POWER MACHINERY,
AIR HOISTS AND AIR COMPRESSORS,
PNEUMATIC TOOLS.

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